CRANFIELD UNIVERSITY

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How does servitization impact inter-organisational structure and relationships of a truck manufacturer's network?

SCHOOL OF MANAGEMENT
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DOCTORAL THESIS
Academic Year: 2009 – 2013

Supervisors: Dr. Mark Johnson and Dr. Janet Godsell
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This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

ABSTRACT

Network relationships play a significant role in the provision of servitized offerings. To date, little empirical research has been conducted to investigate the link between servitization and inter-organisational relationships. The objective of this doctoral thesis is to explore the implications of servitization on a manufacturer's network. Particular emphasis is placed on the impact on the network structure and relationship attributes. An exploratory in-depth case study was conducted within the truck manufacturing industry using a multi-organisational perspective. An abductive research approach was adopted which was underlined by pragmatism. As part of this approach, 43 interviews were conducted in a total of 11 companies. The findings of the study suggest that managers need to be aware of the different customer needs, related offerings and resultant implications on the network structure and relationships. To this end, the findings show that as the offerings move towards advanced servitized offerings the network becomes more complex in terms of its structure and relationships. The research contributes to the literature by providing a more nuanced description of what actually occurs in a network when a manufacturer provides servitized offerings in conjunction with other product-based offerings. In particular, it identifies the relationship attributes that need to be managed in order to drive the right behaviour for the provision of each of these offerings. Moreover, it is the first known study to uncover triadic as well as tetradic network structures in a servitization context. Equally important, it provides a framework that captures the interplay between the different offerings and the resultant network structure and relationship attributes. In all of these capacities, this research is one of the first known studies to uncover some of the complexities surrounding the way in which inter-organisational relationships are enacted in a servitization context.

Keywords:

Servitization, inter-organisational relationships, supply networks, case study

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From the onset of my doctoral endeavour I had always been aware of the rugged ground over which this long journey would be taken. Having little background and experience in this particular area of research was an influential driver of my anxious start. In fact in the first few months, I experienced all the stereotypical hurdles that could be imagined for someone coming from a disadvantageous background who was trying to fit into a new institution in a different country. Nevertheless, I never thought of returning to my comfort zone. This is mainly because I have the self-inflicted belief that there is no such thing as impossible ─of course─ within the limits of logical and moral reality. Even in the most challenging times, I always believed there was a way forward. Perhaps, the words of Martin Luther King Jr. are best suited to describe this journey; “If you can't fly then run, if you can't run then walk, if you can't walk then crawl, but whatever you do you have to keep moving forward”. Albeit these words were uttered in a totally different context, I believe they hold a great deal of relevance to the completion of my doctoral journey. At least this attitude helped me achieve what was first seen as nearly impossible. When I look back now, it gives me great pleasure to see what I have achieved in the last four years. The development is obvious in terms of academic success, by the very completion of this thesis and the publications in scholarly journals. However, I could not have achieved this progress without the help of a number of invaluable people. Their contribution has had a great deal of impact on me both as an academic and as a person. Thus, hereby I would like to acknowledge their support in an official manner!

I consider myself extremely fortunate to have been able to work with such a great group of people in the Cranfield Supply Chain Research Centre. First and foremost, I would like to acknowledge the support of Mark Johnson throughout my doctoral journey. In fact, he is the one responsible for bringing me into the world of academia. With Mark it has always been a learning experience starting from the basics of research in the beginning to the publication level at later stages. I have a great deal of respect for and gratitude towards Mark for being a

mentor, supervisor, colleague and most importantly a wise friend. Secondly, I would like to thank Janet Godsell for her incredibly valuable support for the completion of this doctoral thesis. Without a shadow of a doubt, Janet was the main driver behind the final momentum to finalize this thesis. She has shown me the practical ways of looking at the academic work while at the same time not losing the theoretical focus. Thirdly, I would like to thank Jawwad Raja for all the support and advice regarding all aspects of academia. It is through him I learned the benefits of academic rigour and attention to detail. Fourthly, I would like to thank Lynne Hudston for all the administrative support throughout my doctoral journey. She has a remarkable personality and was always the source of joy and laughter throughout my time in Cranfield. Last but not least, I would like to thank the entire Supply Chain community at Cranfield for being the most enjoyable, open-minded and friendly group of people I have ever worked with. In particular, I would like to acknowledge Professors Alan Harrison and Lynette Ryals for their role in supporting the later parts of my PhD. Similarly, I also acknowledge the support of the Cranfield IMRC PSS projects.

On the whole, I would like to dedicate this thesis to my family. I can't thank my mother, father and brother enough for their never ending support and patience with me. My last acknowledgment is for my wife-to-be Ayten. She brought the light of love into my humble doctoral life. Whenever I needed her she was always there for me – be it for the darkest moments or the most cherished ones. She helped me overcome all the mental barriers regarding this journey but even more importantly she showed me how to appreciate the joys of life even through the simplest occasions. Her never-ending positive energy provided me the source of motivation I needed to complete this thesis. From the bottom of my heart, I look forward to enjoying a long and happy life together with her.

In the last four years, I have put a great deal of effort for the completion of this thesis. It has genuinely been a life changing experience. I especially enjoyed the last two years when the efforts started to pay off. Nevertheless this doctoral journey has to come to an end and now it is time to say goodbye to pursue other academic journeys that are lying ahead.

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1 INTRODUCTION

The winners will be those who deliver solutions from the users' point of view.

Jack Welch (Kumar, 2004, p. 84)

If you think you can go alone in today's global economy you are highly mistaken.

Jack Welch (Harbison and Pekar, 1998, p. 11)

These quotes by Jack Welch[1] highlight the importance of the two fundamental tenets of this thesis: servitization – the provision of solutions – and inter-organisational relationships. On the one hand, organisations are increasingly offering customized combinations of products and services which are not considered as the mere provision of services but rather a paradigm shift moving away from factory oriented product-centric thinking towards a more customer-focused, relational approach (Baines et al., 2007; Davies et al., 2006; Galbraith, 2002; Tuli et al., 2007; Windahl and Lakemond, 2006). On the other hand, the blurring boundaries of organisations are increasingly bringing about the reality of competing on the basis of networks (Christopher, 2011). In line with this, are the notions of 'no business is an island' (Håkansson and Snehota, 1995) and 'an organisation cannot simply have all the smartest people in the world' (Chesbrough, 2006).

Despite the logical link between the trends towards servitization and inter-organisational relationships, there is only a handful of research which addresses this issue. This thesis aims to address this gap by empirically investigating the implications of servitization on inter-organisational relationships.

[1] Jack Welch served as the CEO of General Electric for 20 years from 1981 to 2001. Under his leadership, the company saw its value rise over 400 times to become one of the largest companies in the world.

This chapter gives a brief overview of the remainder of the thesis by explicitly focusing on the research problem and its rationale, followed by the proposed research objective and questions. Next, an overview of the thesis is presented by illustrating the key points emerging from the study.

1.1 The research problem

"The manufacturing industry is of vital economic importance to the UK, making a significant contribution in terms of the value of goods and services the industry produces and employment" (Department of Business Innovation and Skills, 2010, p. 2).

Recent reports by UK government agencies have shown that even though productivity has increased dramatically in recent decades, the profitability from manufacturing is proportionally decreasing (Department for Business, Enterprise and Regulatory Reform (BERR), 2008; Department of Business Innovation and Skills (BIS), 2010;). One of the main reasons for low profitability is the rise of low-cost manufacturing in developing economies (Neely, 2008). Nowadays, the UK, together with other Western economies, is finding it difficult to compete with these low-cost economies. Three million jobs have been lost in the UK manufacturing industry over the last 30 years (Sainsbury, 2007) thus illustrating the need for the manufacturing sector to respond to the changing dynamics of globalisation. For over a decade there have been calls for manufacturers to move up the value chain to offer more innovative solutions to their customer base (Wise and Baumgartner, 1999). The main argument behind this is that innovation can lead to the design and development of high value and complex solutions where Western manufacturers no longer need to compete on cost alone (Lockett et al., 2011).

There has been a growth of interest in manufacturers attempting to move downstream and provide innovative solutions composed of associated services and manufactured goods (Oliva and Kallenberg, 2003; Wise and Baumgartner, 1999). This shift has been termed the 'servitization of business' (Vandermerwe and Rada, 1988). The supposed move towards servitization is argued to

comprise a radical departure from traditional ways of working, with an associated need for the structural realignment of management principles. The extant literature on servitization predominantly focuses on changes within the manufacturing organisation (Davies et al., 2006; Oliva and Kallenberg, 2003). In particular, these studies focus on the focal firm's internal processes (Oliva and Kallenberg, 2003), functions and capabilities for the provision of servitized offerings (Davies et al., 2006; Pawar et al., 2009), but neglecting the network level relationships with customers, partners or suppliers.

In today's world, one organisation cannot simply have all the resources and capabilities to create and sustain its innovative business models (Delbridge, 2003). Especially in high value manufacturing, where offerings are composed of complex products and services, organisations tend to couple with multiple stakeholders ranging from commodity suppliers to strategic alliances in order to provide and support offerings (Johnson and Mena, 2008; Penttinen and Palmer, 2007). Considering that in some instances 75% of the products and services are sourced from the supply chain (Trent, 2004), manufacturers are increasingly relying on their relationships with partners/suppliers for the provision of their offerings (Gulati and Kletter, 2005).

In addition, it has also been argued that today competition is not between companies but between supply chains (Christopher, 1992). Within this context, recent literature argues that strategies towards servitization significantly impact on supply networks (Bastl et al., 2012; Lockett et al., 2011; Martinez et al., 2010). However, little is known as to how these networks are configured to provide servitized offerings. This is despite the importance of networks and relationships in a servitizing context (Baines et al., 2009a; Galbraith 2002). For instance, Davies (2004) and Galbraith (2002) stress the importance of relationship management especially when offerings move from being 'product-oriented' towards being 'result-oriented'. Davies (2004, p. 753) even argues that *"for many firms, the biggest challenge will be developing the capabilities to integrate different pieces of a system provided increasingly by an external network of specialized component suppliers, subcontractors and service*

providers". However, the studies mentioned above (e.g. Davies et al., 2006; Oliva and Kallenberg, 2003; Windahl and Lakemond, 2006) all collected their empirical data in focal firms, focusing on their internal processes, functions and capabilities and thus neglecting the network level relationships with customers, partners and suppliers.

In a related study which considered a part of a servitizing network, Martinez et al. (2010) investigated the change process of a servitization provider through the lens of a manufacturer and two of its suppliers. Their study found empirical evidence for the notion that manufacturers need to change the way they manage their relationships with suppliers and customers due to the introduction of servitization. This change is characterized in terms of cooperative norms of behaviour, greater know-how and information exchange, relationship transparency, mutual adaptations and tighter operational linkages (Cannon and Perreault, 1999; Dyer and Singh, 1998). Martinez et al.'s (2010) study takes a further step to investigate the implication of servitization on supplier organisations. Yet, this aspect is not the central focus of their research but rather a part of other core themes. In a very recent study, Bastl et al. (2012) used Cannon and Perreault's (1999) framework to analyse the behavioural expectations amongst two supplier organisations and a manufacturer. This study is useful in terms of setting the foundations for a theoretical framework to analyse the inter-organisational relationships in the servitization context. However this paper, similarly to Martinez et al. (2010) and Lockett et al. (2011), only analysed changes in supplier relationships. In addition the foci of these studies were not on the change process in a context where actors are determined by the process, but were predefined by the researchers. This is an issue outlined by Windahl and Lakemond (2006) who argue that the key relationships for the offerings should be identified empirically in their real life context.

Given the recent trends in the manufacturing industry towards servitization and outsourcing, relationship management is becoming a fundamental part of an organisation's strategy (Gulati and Kletter, 2005). These trends are also

reflected in academia, with the increasing number of publications on servitization or integrated solutions on the one hand and outsourcing and relationship management on the other. Despite the logic of servitization requiring a more proactive approach to relationship management, there is scant research that addresses this issue. While servitizing manufacturers generally lack a structured and proactive approach to relationship management (Windahl and Lakemond, 2006), the extant literature is also unable to provide a way to approach relationships. Although the literature on servitization frequently emphasizes the importance of inter-organisational relationships (e.g. Baines et al., 2007; Davies et al., 2006; Tuli et al., 2007; Windahl and Lakemond, 2006), little is known about what really constitutes these relationships in a servitization context. Given the scarce research on this matter, I argue that inter-organisational relationships in servitization can even be considered as 'black boxes'. In particular, there is an emerging need to explore the key attributes of these relationships in order to better understand the nuances in providing servitized offerings in relation to traditional product based offerings.

1.2 The research objective

Extant studies on servitization acknowledge the important role of networks and relationships for the successful provision of product-service offerings (Bastl et al., 2012; Cohen et al., 2006; Davies et al., 2006; Galbraith, 2002; Johnsen et al., 2009; Lockett et al., 2011; Oliva and Kallenberg, 2003; Tuli et al., 2007; Vandermerwe and Rada, 1988; Windahl and Lakemond, 2006). Despite the frequent mention of relationships, there are only a handful of studies which explicitly focus on this topic (e.g. Bastl et al., 2012; Johnsen et al., 2009; Lockett et al., 2011; Windahl and Lakemond, 2006). Importantly the extant literature is dominated by the manufacturer's perspective (cf. Tuli et al., 2007) whilst the customers', suppliers' and partners' perspectives are missing. Amongst these studies there is a divide between the marketing literature focusing on customer-manufacturer relationships (e.g. Macdonald et al., 2011; Tuli et al., 2007) and

the operations management literature focusing on manufacturer-supplier relationships (e.g. Bastl et al., 2012; Martinez et al., 2010; Lockett et al., 2011). A closer investigation of the identified relationship characteristics shows a lack of theoretical focus (Bastl et al., 2012). This, in turn, results in the inclusion of characteristics which are related to structure or the strategy of the organisation rather than its relationships (i.e. Windahl and Lakemond, 2010).

In the light of these conclusions, firstly, there is an emerging need to conduct empirical research by considering the network as a whole. This is rather important in order to move away from predetermined relationships to explore the key relationships as they unfold over time after the introduction of servitization. With this in mind, there is a need to move away from a narrow focus on customer or supplier relationships only. Secondly, in line with the recent calls for a more customer focused approach to servitization (Tuli et al., 2007; Storbacka, 2011), there is a need to emphasize the customers' perspective over the manufacturers'. This is purely because, by definition, the aim of servitization is to satisfy customers' evolving needs (Baines et al., 2007; Raja et al., 2013). It is important to note that such an approach could only be achieved through developing and managing close relationships with customers. Finally, there is a need to adopt a comprehensive theoretical framework to study inter-organisational relationships (IORs) in the context of servitization (Bastl et al., 2012). The lack of theoretical framing in the extant studies shows a lack of coherence in the identified characteristics (e.g. Johnsen et al., 2009; Windahl and Lakemond, 2006).

The objective of this research is to explore the impacts of servitization on the network of a manufacturer. In so doing, it aims to identify the inter-organisational network structure for servitized offerings as opposed to product-based offerings. Linked to this, there is also a need to identify the key relationship attributes within a servitized network. This is seen as essential since there is an emerging gap both in academia and practice in terms of a proactive approach to relationship management (Bastl et al., 2012; Windahl and

Lakemond, 2006). One way to address this gap is by exploring the inherent characteristics of such relationships.

1.3 The structure of the remainder of the thesis

Following the introduction, the structure of the remainder of this thesis is as follows.

In Chapter 2, the literature review is conducted in order to refine and develop the research questions and the resultant conceptual framework. This is achieved through the review and synthesis of the servitization and IOR literatures. Within the servitization literature, initially a definition for servitization is proposed followed by explaining the types of offerings and a discussion on the customer's perspective. Then, the expected outcomes and the contingencies of servitization are identified. In the next section, those studies focusing on relationships in the servitization context are discussed. Next the thesis moves on to the second domain of literature which is IOR. In a similar manner, the chapter starts with the aim of conceptualising and defining IOR in order to clarify the meaning of the term within the limits of this thesis. Next, Cannon and Perreault's (1999) framework is introduced and discussed as an appropriate lens for the study of IORs. This is followed by the discussion and synthesis of extant research settings that are used to study IORs. In the light of the conclusions drawn from the extant literature, the research objective and research questions are proposed in the next section. Finally in the last section, a conceptual framework is designed and proposed based on the research questions.

In Chapter 3, the research methodology adopted in this thesis is discussed and justified. The chapter starts by discussing pragmatism as a research philosophy. This chapter emphasizes the characteristics of pragmatism and explains the foundational tenets of this philosophy. In so doing, conclusions are drawn based on the works of Charles Sanders Peirce, William James and John

Dewey who are the founding fathers of this field. Next, the research method, which is a single case study, is described and the rationale for selecting this method is explained. This is followed by a description of the abductive research approach. Next, the process for case study design is explained. This includes defining the research objectives, fieldwork preparation, data gathering, data analysis and dissemination. Finally, in the last section, the trustworthiness of the study is evaluated by utilizing nine different criteria that are identified in the literature (cf. Hirschman, 1986; Strauss and Corbin, 1998).

In Chapter 4, the findings of the thesis are detailed and discussed. This starts with a description of the context of the industry and the case company followed by the discussion of the offerings and network structures. Each of the three offerings and their resultant network structures are discussed in turn. Next, the relationship attributes are elaborated. Finally in the last section, the linkages between the offerings, network structures and relationships are detailed.

Chapter 5 is the discussion chapter. Within this chapter, the emerging findings are compared and contrasted with respect to the extant literature. In so doing, the conceptual framework which is based on the extant literature is further extended through the integration of the findings.

Chapter 6 is the concluding chapter. This starts with a brief presentation of the research problem and rationale for the study. Next, the manifestations of pragmatism in throughout the study are detailed. Then the theoretical contributions of this doctoral thesis are presented. This is followed by implications for practice, limitations and suggestions for future research.

1.4 Summary of Introduction Chapter

The aim of this Chapter was to introduce the research objective which is underlined by the research problem. In addition, the remaining thesis chapters were briefly detailed in order to provide an overview of the document. Next, Chapter 2 reviews the servitization and IOR literatures in order to identify the

research questions and the conceptual framework which will form the basis of this thesis.

2 LITERATURE REVIEW

Servitization is seen as a means for achieving competitiveness in a globalising world.

Baines et al., 2009a

2.1 Overview of the Chapter

Within the context of servitization, the purpose of this chapter is to outline the development of the research questions and conceptual framework through the analysis and synthesis of the two main bodies of extant literature which are positioned at the centre of this thesis. These are servitization and Inter-organisational relationships (IOR). Thus, a review of the relevant literature is necessary for a number of reasons. In the first instance, there is a need to clearly define the key terms for this study. This is especially important for 'servitization' since the extant literature is abundant with a plethora of terminologies which are used to describe almost identical phenomena (Pawar et al., 2009; Tuli et al., 2007). Thus, the chapter starts with a review of the servitization literature to search for a suitable definition for the purposes of this study. Then, the two following sections focus on uncovering the contextual contingencies of servitization (Chapter 2.2.3) together with its proposed outcomes (Chapter 2.2.3). The next section focuses on the role of relationships and networks within the servitization context. The main aim of this section is to discuss and identify the contributions made by the studies which specifically focus on network and relationships within the servitization literature. The chapter then proceeds with the second main theme of the review which is IORs. In a similar manner, the literature starts by defining the key terms in this domain followed by the theories used to study IORs and the adoption of Cannon and Perreault's (1999) framework as an appropriate lens to study IORs. The next

section serves as a synthesis of studies focusing on the way in which IORs are studied in the general management literature. Figure 1 serves as an illustration of the structure of the chapter. The arrows in the figure represent the sequence of the sections. In Section 2.4 research objective and questions are proposed based on the conclusions drawn from the reviewed literature. In the light of the research questions, a conceptual theoretical model is proposed and explained in Section 2.5.

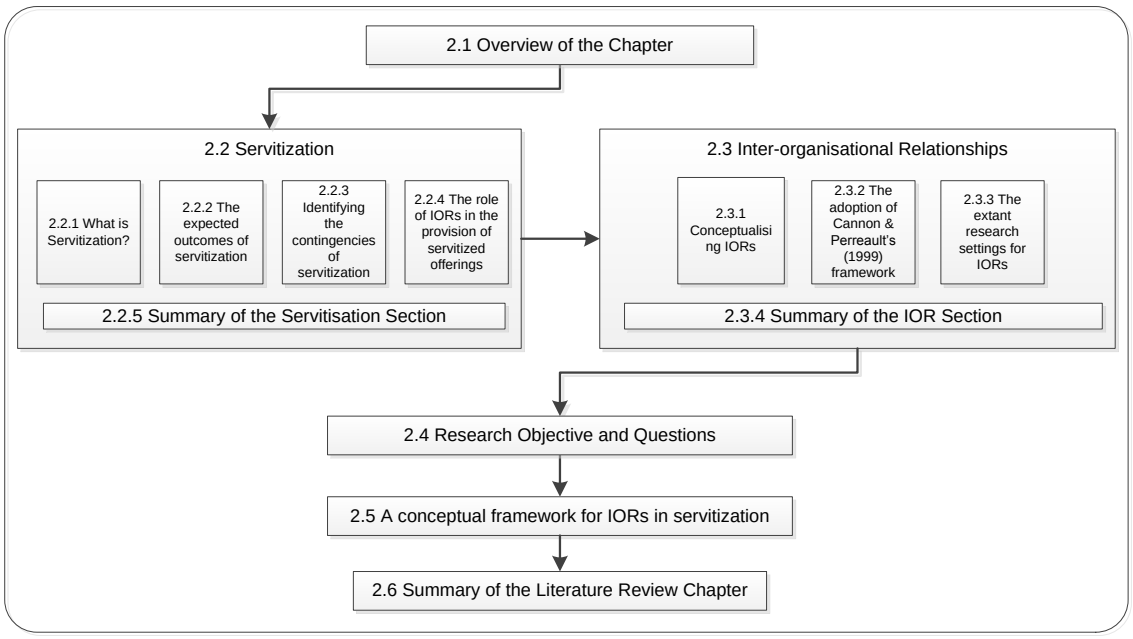


Figure 1. The structure of the literature review chapter

2.2 Servitization

2.2.1 What is servitization?

It is thought that the concept of services and servitization is a recent invention as it has attracted academics' attention for the last 20 years. Nonetheless, the concept has been around for a long time. It can even be traced back to the 19th century (Schmenner, 2009). Frédéric Bastiat, a French political economist in the mid-19th century, criticised the conventional theory of value attachment to physical objects and argued for focusing on utility provision, but it was not until post-World War II that the concept was adopted (Vargo and Lusch, 2004). Theodore Levitt (1969), an influential professor at the Harvard Business School, captured this concept with his memorable quote; "people don't want to buy a quarter-inch drill. They want a quarter-inch hole". Nevertheless, the reason behind the recent popularity in servitization is the rise of manufacturing in low-cost economies which has made it extremely difficult for Western manufacturers to compete based on cost alone. With this in mind, Western manufacturers need to move beyond manufacturing and offer services and solutions in order to differentiate their products and to offer increased value to customers (Penttinen and Palmer, 2007).

The term servitization was first defined by Vandermerwe and Rada (1988) as a strategy in which companies offer their products as part of a package that includes services, support, self-service and knowledge. There have been plenty of other definitions introduced since then. These are documented in Table 1. For instance, Robinson et al. (2002, p. 150) defines servitization as "[a concept] which goes beyond the traditional approach of providing additional services but considers the total offer to the customer as an integrated bundle consisting of both the goods and the services". Ren and Gregory (2007 p. 124) define servitization as "a process of change of strategy where manufacturing companies opt for an orientation to services and/or develop more and better services with the goal of satisfying customer needs, obtaining competitive advantages and improving the company's performance". Whether servitization

is defined as a strategy (e.g. Vandermerwe and Rada, 1988), a concept (Robinson et al., 2002) or a process (e.g. Ren and Gregory, 2007), central to these definitions is the element of 'change' and it is this change process that has attracted an increasing amount of attention in various disciplines.

Table 1. The extant definitions of Servitization

Author (date)	Extant definitions of Servitization
Vandermerwe and Rada (1988)	"…as a strategy in which companies offer their products as part of a package which includes services, support, self-service and knowledge".
Robinson et al. (2002)	"…[a concept] which goes beyond the traditional approach of providing additional services but considers the total offer to the customer as an integrated bundle consisting of both the goods and the services".
Slack (2005)	"Servitization is the generic (if somewhat unattractive) term that has come to mean any strategy that seeks to change the way in which product functionality is delivered to its markets".
Ren and Gregory (2007)	"… a process of change of strategy where manufacturing companies opt for an orientation to services and/or develop more and better services with the goal of satisfying customer needs, obtaining competitive advantages and improving the company's performance".
Neely (2008)	"… the innovation of an organisation's capabilities and processes so that it can better create mutual value through a shift from selling product[s] to selling Product–Service Systems".
Schmenner (2009)	"… a term coined to capture the innovative services that have been bundled (integrated) with goods by firms that had previously been known strictly as manufacturers"
Baines et al. (2009a)	"… the innovation of an organisation's capabilities and processes to shift from selling products to selling integrated products and services that deliver value-in-use".

Since the term servitization was introduced by Vandermerwe and Rada (1988) 25 years ago, there has been plenty of interest by scholars and practitioners alike towards investigating the principles, structures, challenges and processes of servitization, and essentially most research in the area has focused on changes within a focal firm (e.g. Davies et al., 2006; Oliva and Kallenberg, 2003). However, these studies emerged organically from different disciplines

under various terminologies. For instance, Product-Service Systems (PSS) (Goedkoop et al., 1999; Manzini and Verzolli, 2003; Meijkamp, 2000; Mont, 2000) servitization (Bastl et al., 2012; Johnson and Mena, 2008) and customer solutions (Storbacka, 2011; Tuli et al., 2007) are all related fields in which this phenomena is being studied. Spring and Araujo (2009), in a comprehensive literature review, investigate alternative product-service combinations in the operations management and marketing literatures in an attempt to draw out similarities and differences across these various terminologies. The following paragraphs, building on Spring and Araujo's (2009) conceptualisation, provide a brief explanation of the various streams of literature related to servitization. The next paragraph details these related concepts which are: support services, product-service systems, bundling and solutions.

2.2.1.1 Related Concepts and Extant Definitions

The most traditional approach to offering product and services is the differentiated view; products and services are developed independently and organised in different departments. Consequently, services can be seen as add-ons to the actual product; thus they are developed subsequently to a specific product. These services are termed as support services by Goffin and New (2001), after-sales services by Armistead and Clark (1991) or supplementary services by Anderson and Narus (1995). Frambach et al. (1997) categorize the services provided as before product sale (e.g. demonstration), during (e.g. finance) and after (e.g. maintenance), but see them as extra to the product and sold as separate, optional elements.

Another stream of studies related to servitization is Product Service Systems (PSS). The PSS term originates from Scandinavian countries and is mainly related to ecological and environmental sustainability (Baines et al., 2009a). As the field progressed, the ecological and environmental dimensions of PSS were treated as a peripheral concept and a focus on economic and business competitiveness emerged. Goedkoop et al. (1999) define PSS as a combination of products and services capable together of meeting user needs. Baines et al. (2007, p. 1543) further state that "the concept of PSS is a special case of

servitization […] that values the performance or utilization of products instead of their properties […] and obtains differentiation through the integration of products and services that provide use value for the customer." Whilst, Mont (2001, p. 34) defines PSS as "A system of products, services, supporting networks and infrastructure that is designed to be: competitive, satisfy customer needs and have a lower environmental impact than traditional business models". Table 2 is a list of explicit definitions stated in the literature that are focused on PSS.

Table 2. The extant definitions of PSS

Author (date)	Extant Definitions of Product Service Systems
Goedkoop et al. (1999)	"A product service-system is a system of products, services, networks of "players" and supporting infrastructure that continuously strives to be competitive, satisfy customer needs and have a lower environmental impact than traditional business models".
Centre for Sustainable Design (2002)	"A pre-designed system of products, supporting infrastructure and necessary networks that fulfil a user's needs on the market, have a smaller environmental impact than separate product and services with the same function fulfilment and are self-learning".
Mont (2001)	"An innovation strategy, shifting the business focus from designing (and selling) physical products only, to designing (and selling) a system of products and services which are jointly capable of fulfilling specific client demands".
Brandstötter et al., (2003)	"A PSS consists of tangible products and intangible services, designed and combined so that they are jointly capable of fulfilling specific customer needs. Additionally PSS tries to reach the goals of sustainable development".
Wong (2004)	"Product Service-Systems (PSS) may be defined as a solution offered for sale that involves both a product and a service element, to deliver the required functionality".
Baines et al., (2007)	"A PSS is an integrated product and service offering that delivers value in use".

Furthermore Baines et al. (2009b), in an effort to converge the PSS and servitization literature, refine the description of servitization to include PSS. In order to do so, they propose the following definition: "Servitization is the innovation of an organisation's capabilities and processes to better create mutual value through a shift from selling product to selling PSS" (p. 555).

Another stream of studies related to the servitization concept is the bundling literature which initially started with a focus on understanding the reason behind why firms offer packages, such as restaurants offering complete dinner

experiences or banks offering safe deposits, loans, credits (Adams and Yellen, 1976; Burnstein, 1960; Stigler, 1963). This literature predominantly focuses on business-to-consumer contexts (Penttinen and Palmer, 2007). In general terms, bundling is defined as the practice of combining multiple products or components at a set price (Johnson et al., 1999); the individual elements may not be available individually, or the total price of the elements bought individually may be significantly greater. Systems selling (Mattsson, 1973) and integrated solutions (Davies, 2003) all involve bundling in this stricter sense of the term.

The solutions literature has recently gained territory, particularly in the marketing domain. Within this domain, there are two main streams which are related to the provision of product-service concepts. These are the customer (or business) solutions literature (e.g. Anderson et al., 2006; Spekman and Carraway, 2006; Storbacka et al., 2009; Tuli et al., 2007), and the solution strategy and management literature (e.g. Brady et al., 2005; Davies, 2004; Galbraith, 2002). The latter is also referred to as the integrated solutions literature. Integrated solutions are a combination of hardware (products) and software components (e.g. technological and market know-how) (Spring and Araujo, 2009). These types of solutions are mainly studied in the context of large scale projects such as the construction of Terminal 5 at Heathrow Airport (Davies et al., 2003). Buyers in consumer or business markets require capabilities in order to buy (Araujo et al., 2003; Langlois and Cosgel, 1998). Integrated solutions aims to provide a system in which all artefacts efficiently operate; therefore it reduces the capabilities needed for a customer to be a successful buyer. This allows customer to focus on its core activities whereas the provider is responsible for implementing a solution composed of various systems and subsystems made up of products and services (Spring and Araujo, 2009).Therefore within the literature, there is a tendency to study the organisational capabilities required to deliver such solutions (Brady et al., 2005; Davies, 2003; Davies et al., 2006).

Table 3 shows a list of definitions that were drawn from a number of influential papers within this domain. As it demonstrates, solutions are defined in various ways.

Table 3. The extant definitions of Solutions

Author (date)	Extant definitions of Solutions
Foote et al. (2001)	"In all sorts of industries, companies that traditionally have made and sold standalone products are changing their strategies. They are creating high-value solutions by integrating various products and services".
Galbraith (2002)	"A recent trend in business strategy is to offer solutions to customers instead of stand-alone products. The companies following a solution strategy bundle their products together and add software and services".
Johansson et al., (2003)	"A solution is a combination of products and services that creates value beyond the sum of its parts…; it is the level of customization and integration that sets solutions above products or services or bundles of products and services".
Brady et al., (2005)	"[A trend] in changing [manufacturers'] strategic focus to compete by providing solutions rather than individual products or services".
Sawhney (2006)	"I define a solution as an integrated combination of products and services customized for a set of customers that allows customers to achieve better outcomes than the sum of the individual components".
Sawhney et al., (2006)	"A solution is a customized, integrated combination of products, services and information that solves a customer's problem".
Davies et al., (2006)	"A solution involves the provision of tailored combinations of products and services as high-value 'integrated solutions' that address the specific needs of large business and government customers".
Tuli et al., (2007)	"A set of customer-supplier relational processes consisting of customer requirements definition, customization and integration of products and services, their deployment and post-deployment customer support, all of which are aimed at meeting customers' business needs".
Storbacka (2011)	"Longitudinal relational processes, during which a solution provider integrates goods, service and knowledge components into unique combinations that solve strategically important customer specific problems, and is compensated on the basis of the customer's value-in-use".

According to Tuli et al. (2007), there exist three main similarities across the extant definitions: 1) a solution consists of a combination of products and services; 2) the products and services are all developed to address a particular customer need, in other words solutions are customized; and 3) a solution

consists of a number of integrated products and services that function together. In the light of these, their study empirically collects data from a large number of managers both from supplier and customer firms. Interestingly, their findings show that suppliers view “a solution as a customized and integrated combination of goods and services for meeting a customer’s business needs” (Tuli et al., 2007, p. 1) which is in line with the extant literature. However, they argue that such definitions are product-centric which tend to underemphasize relational processes that customers consider to be crucial to their operations. Interestingly though, their findings show a sharp contrast between the view of suppliers and that of customers. They state that “[…] customers expect a solution to include processes directed at understanding their requirements, customizing and integrating products, deploying them, and supporting them on an on-going basis” (Tuli et al., 2007, p. 4). It is on that basis that they propose a new definition that views solutions as a set of customer-supplier relational processes consisting of “customer requirements definition, customization and integration of products and services, their deployment and post-deployment customer support, all of which are aimed at meeting customers’ business needs” (Tuli et al., 2007, p. 1). It is claimed that such a definition is appropriate for solutions in a number of ways. Firstly, the aim of the solutions is to satisfy customers’ needs, therefore it is desirable to define solutions by taking into account the view of the customer. It is also argued that the literature predominantly focuses on the supplier’s perspective which explains the reason behind the similarity in the way in which the extant literature and suppliers define solutions. Secondly, they posit that focusing on relational processes “implies that a solution is not just a customized bundle of products that is exchanged for a price, rather it is an on-going relational process of defining, meeting and supporting a customer’s evolving needs” (Tuli et al., 2007, p. 5). This is also in line with the extant literature that argues for a relational approach to solutions as opposed to transactional (Ballantyne and Varey 2006; Cova and Salle, 2008) and also with the Service-Dominant Logic (SDL) that advocates a move from a product-centric to a process-centric view for solutions (Vargo and Lusch, 2004). In a further study, Storbacka (2011), consistent with Tuli et al.

(2007), proposes a more general definition, where the emphasis is not on the pre-identified stages but rather on the relational processes that evolve over time. In the light of these, it is now necessary to adopt an appropriate definition for servitization that is in line with the scope of this research.

2.2.1.2 Focusing on the Relational Process View

There are a few interesting observations which have emerged from studies on servitization and related concepts. One can argue that various different names are termed by different scholars for similar versions of the same phenomena (i.e. PSS, bundling or solutions). Embedded in this argument is the assumption that the main characteristics are adopted from the original term – servitization. However, a number of common elements could be identified from these various definitions. The first common element is the notion of change which is central to the majority of the definitions, whether the concept is expressed as a strategy (e.g. Foote et al., 2001; Slack, 2005; Vandermerwe and Rada, 1988), innovation (e.g. Baines et al., 2009a; Neely, 2008), system (e.g. Goedkopp et al., 1999; Centre for Sustainable Design, 2002) or trend (e.g. Brady et al., 2005; Galbraith, 2002). The second is the combination or bundling of a product and service mix in the offering. The third is the notion that a combination of products and services creates a different type of offering which is not merely the addition of services to products. The fourth is the long-term orientation of these types of offerings which necessitates a relational process view on servitization. The final common element is the emphasis on satisfying customer's evolving needs. This is crucial since a servitized offering is generally provided over a longer period of time where the particular needs of the customer change and evolve throughout the life cycle of the offering.

In the light of these conclusions, it can be seen that only the Tuli et al.'s (2007) definition is comprehensive enough to clearly express the common characteristics of servitization. Therefore, I adopt Tuli et al.'s (2007) and

Storbacka's (2011) definitions to define servitization for the purposes of this study. To put simply, I view servitization as:

> *longitudinal relational processes, during which a provider integrates goods, services and knowledge components into unique combinations that are aimed at meeting customers' evolving business needs.*

Hence, I use the original term servitization to describe the phenomena and operationalize the definition above for description throughout the rest of the thesis. Additionally, I use the term 'offering' to explain the product-service mix provided to the customer.

2.2.1.3 Defining Servitized Offerings

This section provides a brief overview of the servitized offerings. So far there has been plenty of discussion in the previous sections regarding the conceptualisation of servitization. However, there is also an emerging need to objectify what we actually mean by such offerings. Therefore, a list of real life examples is presented in Table 4. These offerings range from energy solutions to vehicle sharing programmes and from document management offerings to jet engine solutions. The most prominent examples are Rolls-Royce Total Care and Xerox document management. The former is an offering in the aerospace industry where customers (e.g. airlines) are contracted for an agreed period of time within which Rolls-Royce takes full responsibility for the repair and maintenance of the products (e.g. the jet engine) and the customers only pay a fixed cost. With a traditional offering, Xerox sells products such as photocopiers to customers who then take on the responsibility for the repair and maintenance of the equipment. However, within a document management offering, the customer only pays for the number of pages printed and all the repair and maintenance activities are carried out by Xerox. In addition the ownership of the equipment stays with Xerox.

Table 4. Real life examples of servitized offerings

Company	Servitized offering	Source
Rolls-Royce	The concept of Total-Care where customers lease the product for an agreed period of time within which Rolls-Royce is responsible for the full maintenance of the product.	http://www.rollsroyce.co.uk
Xerox International	Products are sold guaranteeing a fixed price per copy from products/processes designed for remanufacturing.	http://www.xerox.com
Parkersell (UK)	Parkersell developed a product service integrated lighting system solution for Sainsbury's which is more efficient in life cycle costing and environmental improvement.	http://www.pss-info.com
Castrol Inc. (USA)	Lubricant service packages reducing lubricant consumption. Profit from cost saving not consumption.	http://castrolindustrial.com
Eastern Energy (UK)	Not just energy but energy management, consumption and process monitoring, and utility awareness and training.	http://www.eastern-energy.co.uk
Electrolux (Sweden)	Initial fee then pay per wash from remotely monitored energy efficient machine and launderette system solutions, including maintenance, repair and finance services.	http://www.corporate.electrolux.com
Mobility (Switzerland)	Vehicle sharing group – 1400 cars, 850 locations, 350 communities. Costs less than 1500€/yr.	http://www.mobility.ch

As illustrated in Table 4, organisations which offer a type of servitized offering tend to create the term in line with their own corporate strategy (e.g. Rolls-Royce's total care or Xerox' document management). As such, there exists a plethora of definitions in the literature which has led some scholars to classify different types of offerings into categories. These scholars (Baines et al., 2007; Hockerts, 1999; Mont, 2004) have generally classified offerings into three categories, as illustrated in Figure 2. Today the classification proposed by Tukker (2004) is the most widely used framework to describe different types of product/service combinations (Pawar et al., 2009). The following paragraphs describe the three main categories of this classification:

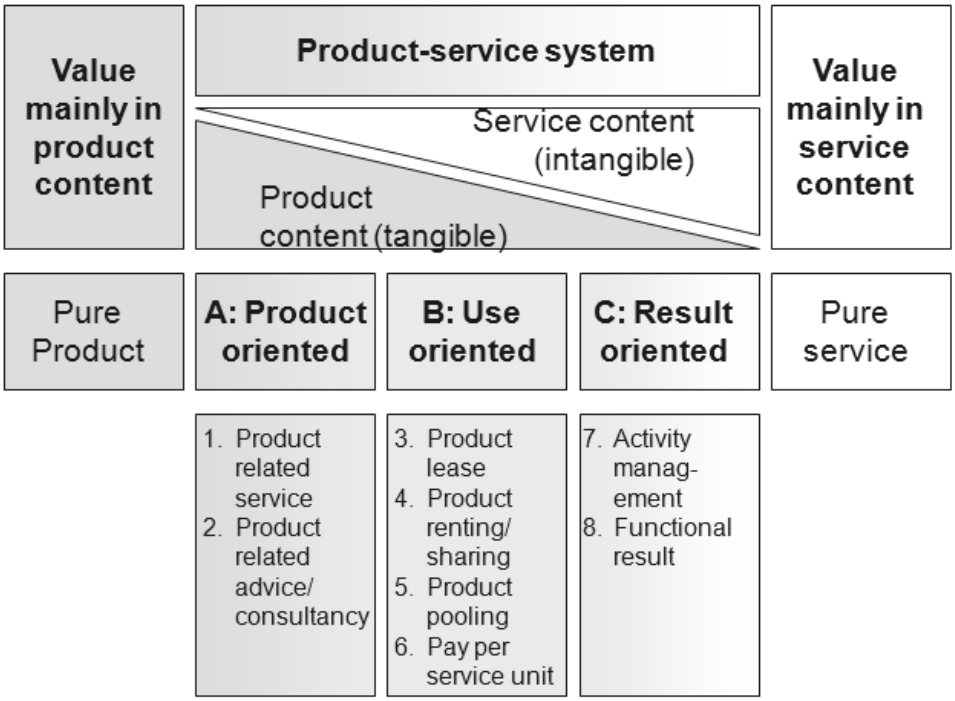


Figure 2. The classification of Offerings (Tukker, 2004)

Product-oriented services are provided at the customer's expense, to support a product which has been purchased from a manufacturer. These are support services, such as repairs and sale of spare parts. They often represent a welcoming but unpredictable revenue for the supplier while for the customer they are a source of disruption and unexpected cost. Product-oriented services require minimal integration between customers and suppliers (Pawar et al., 2009).

Use-oriented services are mainly related to the use or functionality of the product-service mix. These can involve the lease or rental of a product, so that customers gain the benefits of the product without the responsibility of its ownership. Use-oriented services, to a limited extent, demand outsourcing of processes (Windahl and Lakemond, 2010). An example of these services is availability type defence contracts. These contracts are mainly around the availability of the equipment for an agreed amount of time at a fixed price. Therefore the supplier is responsible for the whole life cycle of the equipment from design to obsolescence including all maintenance related activities (Johnson and Mena, 2008).

Result-oriented services involve an agreement specifying the end result to be delivered, not the technical specifications of the product which delivers it. A price is paid for the achievement of the result, leaving the manufacturer to determine the most cost-effective means of achieving it (Baines et al., 2007). An example of these services is the Rolls-Royce Total Care offering, in which the customer only pays for the hours the engine is used rather than the price of the product or the after-sales.

It must be noted that, in practice, these offerings are highly customized. Therefore, in terms of what services are included in one category does not necessarily mean that these cannot be included in another. The categorization is mainly around the function of the offering whether it is sold as a 'product' or 'use' or 'result'. It is important to note that the introduction of product, use or result-oriented services involves different degrees of integration between manufacturers, customers and the rest of the network (Baines et al., 2007). However, the extant literature does not detail what this actually means in terms of integration and the resultant implications for organisations in the network. What is clear, however, from the literature is the need for manufacturers to undertake a transition in structuring both at the organisational (cf. Oliva and Kallenberg, 2003) and network levels (Windahl and Lakemond, 2010) based on the customers' needs.

2.2.1.4 Understanding the Customer Perspective

The customer perspective is of central importance for the provision of servitized offerings (Baines et al., 2009a; Galbraith, 2002; Miller et al., 2002; Tuli et al., 2007) since these offerings entail long-term relationships between manufacturers and their customers (Bastl et al., 2012; Gulati and Kletter, 2005; Lindberg and Nordin, 2008; Tuli et al., 2007; Windahl and Lakemond, 2006), with customer expectations changing as relationships develop (Macdonald et al., 2011). It is therefore imperative for providers to understand the evolving needs of customers (cf. Penttinen and Palmer, 2007; Vandermerwe, 2000) in order to deliver suitable outcomes (Johnstone et al., 2009; Lindberg and Nordin, 2008).

Manufacturers need to understand how customers value servitized offerings in order to create and deliver the offerings that meet customers' expectations (Baines et al., 2009a; Vandermerwe, 1990). As such, manufacturing firms need to become more service-oriented (Davies et al., 2006; Johnstone et al., 2009). The early work of Lele and Karmarkar (1983) recognised the need to understand customers' expectations of goods and services. However, this view was only recently recognised (cf. Tuli et al., 2007). This is despite much of the literature acknowledging the voice of the customer as the central subject matter (cf. Griffin and Hauser, 1993; Naumann and Giel, 1995). In addition, empirical research predominantly focussed on manufacturer perspective (cf. Neu and Brown, 2005) thus the customer's perspective was often ignored. This is considered a gap in the literature (Kowalkowski, 2011; Tuli et al., 2007). It is further argued that it is crucial for manufacturers to understand their customers' priorities (Raja et al., 2013). In doing so, manufacturers need to focus on understanding the customers' characteristics or imperatives. In particular, it is important for manufacturers to understand the underlying reasons for buying servitized offerings, as opposed to product offerings (Kowalkowski, 2011). In addition, further research is needed to understand what drives customers to acquire different servitized offerings (Raja et al., 2013). Despite the general consensus on the importance of understanding the customer perspective for servitized offerings, only a handful of known studies focus on this issue. These studies are discussed next.

Hitherto, the extant studies focusing on the customer perspective are generally based on the concept of value. For instance, Kowalkowski (2011) developed a conceptual explanation of value derived from products, as opposed to the value derived from servitized offerings within the SDL concept. The study identifies genuine factors pertaining to customers of traditional and servitized offerings with respect to different value propositions. In so doing, it is argued that if the acquired resources are not critical to customers' operations, then the decision is generally made to engage in transactional relationships (van Weele, 2004) thus valuing short-term benefits such as the unit price over other factors (Kowalkowski, 2011). But in stark contrast, for resources that are considered

strategic (cf. Kraljic, 1983), customers tend to favour servitized offerings that are delivered through a close collaboration with the manufacturers over a longer period of time (Kowalkowski, 2011). Particular emphasis is also placed on different buying centres inside customer organisations. This is especially relevant for offerings spanning over a long period of time since manufacturers interact with different departments inside the same organisation. For instance, it is generally common for manufacturers to interact with after-sales or parts departments for the provision of the service component within the servitized offering. This is an important issue since for product-based offerings manufacturers tend to interact only with a single point of contact within the customer organisation (Michel et al., 2008). To this end, Kowalkowski (2011) points out the importance of understanding the perspectives of the different functions inside customers' organisations. These are identified in the literature as users, payers and buyers by Sheth and Mittal (2004) and later conceptualised in the context of servitization by Michel et al. (2008). These three distinct customer roles apply to both individual and organisational customers (Sheth and Mittal, 2004). Furthermore, Michel et al. (2008) contend that, depending on the context, three customer roles could be performed by one individual and for other instances these roles could be performed by three different individuals. For instance, in the business-to-business heavy equipment industry, it is almost certain that the employees who use the machinery (i.e. drivers) and employees who buy the machinery (i.e. purchasing managers) are not the same people. In addition, it is most likely that the employees who pay for the machinery (i.e. financial managers) belong to different departments as well. In turn, these different departments tend to have varying needs and requirements (Michel et al., 2008).

In another related study, Tuli et al. (2007) point out to the dominance of manufacturer's perspective in the extant servitization literature which is at odds with the definition of the concept that is to meet customers' needs. Thus, they argue customer factors must be taken into account for the effectiveness of the servitized offerings. In so doing, they define three main factors: customer

adaptiveness, political counselling and operational counselling. These factors are detailed in Table 5 below.

Table 5. The customer factors for solution effectiveness

Customer factor	Definition
Customer Adaptiveness	"Customer adaptiveness refers to the extent to which a customer is willing to modify its routines and processes to accommodate a supplier's products. It is similar to the norm of relational flexibility or the willingness of partners to adjust to each other as circumstances change […]". (Tuli et al., 2007, p. 11)
Political Counselling	"Political counselling refers to the extent to which a customer provides a supplier with information and guidance regarding the political landscape in the customer organization. [...] Political counselling helps a supplier better understand the priorities of the various stakeholders in a customer firm. This enables the supplier to define the customer's requirements in a more complete and nuanced manner. In addition, knowledge of a customer's political landscape is useful for customizing and integrating products to address the sensitivities of various stakeholders". (Tuli et al., 2007, p. 12)
Operational Counselling	"It refers to the extent to which a customer provides information and guidance about its operations to a supplier. As with political counselling, it is a manifestation of one form of the information exchange norm […] Operations information refers to information about the technical systems, business processes, and company policies in a customer firm". (Tuli et al., 2007, p. 12)

In this aspect, Tuli et al. (2007) take a step further to introduce the characteristics on the part of the customers that are required for the effectiveness of the offering. In other words, these factors enable us to differentiate and understand the differences between the customers who are already using servitized offerings. Thus, whereas Kowalkowski's (2011) conceptualisation provides the foundations to understand the rationale and context behind the decision to purchase servitized offerings, Tuli et al.'s (2007) factors allow us to understand the customer perspective during the course of the offering. In other words, Kowalkowski's (2011) conceptualisation is related to the pre-purchase stage while Tuli et al.'s (2007) factors are related to the post-purchase stage. Thus, the latter provides the foundations to identify the customers who are using servitized offerings in an effective manner. Additionally, these factors can potentially help us to understand the extent to which customers utilize different servitized offerings.

In the light of the above, it is concluded that understanding the customer perspective is fundamental for the provision of servitized offerings (Macdonald et al., 2011; Kowalkowski, 2011; Tuli et al., 2007; Vargo and Lusch, 2004). Thus, manufacturers need to first understand their customers' requirements and related contextual drivers. This could be achieved through a meaningful and systematic interaction with the customer. In particular, manufacturers need to understand the key stakeholders in the customer organisations (Kowalkowski, 2011) and accordingly attend their needs in an efficient manner. The extant literature provides a number of factors which can broadly be considered as customer imperatives that must be considered for the provision of servitized offerings (c.f. Kowalkowski, 2011; Tuli et al., 2007). It is through addressing these imperatives that manufacturers are able to reap the benefits or rewards of servitization (Tuli et al., 2007). The next section details the expected outcomes argued for servitization in the extant literature.

2.2.2 The expected outcomes of servitization

It is argued that servitization provides manufacturers with a means to achieve competitive advantage (Foote et al., 2001; Gebauer and Friedli, 2005; Oliva and Kallenberg, 2003). As such, there are various benefits, or in other words positive outcomes, that are identified in the extant literature. For instance, servitization is argued to 'lock in' customers (Baines et al., 2007; Cohen and Whang, 1997; Vandermerwe, 1988; Wise and Baumgartner, 1999), facilitate product-centred innovation (Vandermerwe and Rada, 1988), coupled with servitized offerings being more inimitable than products (Baines et al., 2007; Johnson et al., 2008; Wise and Baumgartner, 1999). Moreover, servitization provides a greater understanding of customer needs (Cohen and Wang, 1997; Pentinnen and Palmer, 2007; Vandermerwe, 2000). Finally, adopting servitization enhances a manufacturer's revenue through providing higher margins (Wise and Baumgartner, 1999), revenue stability (Oliva and Kallenberg, 2003), and additional sources of revenue (Cohen et al., 2006). In an effort to categorize the potential outcomes of servitization, Lockett et al. (2011) identify three main groups:

1- *Revenue enhancing benefits*: these are mainly related to the economic and financial benefits of servitization which could be measured, such as higher revenues or increased market share.

2- *Value enhancing benefits*: these are the benefits related to the provision of product-service offerings which directly or indirectly affect revenues by satisfying customer needs.

3- *Sustained benefits*: these are the long-term benefits that are both revenue and value enhancing.

Table 6. The benefits of servitization

	Baines et al. (2007)	**Penttinen and Palmer (2007)**	**Oliva and Kallenberg (2003)**	**Wise and Baumgartner (1999)**	**Desmet et al. (1998)**	**Cohen and Whang (1997)**	**Vandermerwe and Rada (1988)**
Revenue-Enhancing Benefits							
Provide additional sources of revenue	√		√	√	√		
Create more stable sources of revenue			√				
Services tend to have higher margins	√		√	√			
Value-Enhancing Benefits							
Customers are demanding more services	√		√	√	√		√
Allow a better understanding of customer needs		√				√	√
Allow maintaining relationships with customers	√	√		√			
Allow a more comprehensive solution to needs		√			√		
Improve after-sales service	√				√	√	
Provide transparency of life cycle costs for the customer					√		√
Sustained Benefits							
Service is a differentiating factor (de-commoditization)	√	√			√	√	
Services are more difficult to imitate	√		√	√	√		√
Facilitate customer lock-in	√			√		√	√
Product-service facilitates the diffusion of innovations							√

Table 6, adapted from Lockett et al. (2011), illustrates and positions the benefits of servitization with respect to a number of selected articles in the extant literature. Of further note is that a servitized offering is likely to offer these benefits as a whole. In all of these capacities, it is important to acknowledge that positive outcomes of servitization are emphasized in the extant literature over the negative outcomes. Nevertheless the financial consequences of servitization are contested by a number of studies which demonstrate the potential negative outcomes for manufacturers (Gebauer et al., 2005; Neely, 2008). For instance, Neely (2008) in a quantitative analysis of Western manufacturers shows that servitizing manufacturers are more likely to be bankrupt as opposed to manufacturers which are not in the service business. Gebauer et al. (2005) also contend that a great deal of time and investment is required for traditional manufacturers to reap the benefits of servitization. In a related study, Fang et al. (2008) quantitatively investigated 477 publicly listed manufacturers during the period of 1990-2005 in order to understand the impact of servitization for generating shareholder value. As a result, they came to the conclusion that there are certain conditions that need to be fulfilled for a manufacturer to generate shareholder value through servitization. These are:

> "(1) a meaningful minimum of services, in the ballpark of 20%-30%, whereas below this critical minimum, service transition strategies may have a negative effect; (2) if the service is strongly related to the firm's core manufacturing business; (3) when industry growth is sluggish; and (4) when the industry is volatile" (Fang et al., 2008, p. 13).

In other words, a manufacturer needs to be in a mature industry with an established customer base and the service revenue should then account for 20-30% of the business. Otherwise, servitization is likely to have an insignificant effect on the firm's performance (Fang et al., 2008).

In the light of these, there are certain differences that need to be considered for the provision of servitized offerings as opposed to product-based offerings. These are discussed as the contingent characteristics of servitization in the next section.

2.2.3 Identifying the contingencies of servitization

The provision of servitized offerings is significantly different from the provision of pure products due to the contingent characteristics of offerings (Oliva and Kallenberg, 2003). These characteristics in turn require significant changes in the way manufacturing organisations manage their relationships both internally and externally (Windahl and Lakemond, 2010). Therefore, the extant research on pure manufacturing or pure service concepts might not be directly applicable. The contingent characteristics synthesized from the extant literature are listed below:

- The very long life cycle of the offering (Aurich et al., 2006; Baines et al., 2007, 2009a).
- Longer than normal relationship between manufacturers, suppliers and customers, resulting in high levels of interdependence and embeddedness (Monczka et al., 1998; Uzzi, 1997).
- The need for a closer customer centricity to satisfy the evolving needs of the customers (Galbraith, 2002; Foote et al., 2001; Vargo and Lusch, 2004).
- The increased level of uncertainty entailed, due to managing tangibles and intangibles at the same time. Demand signals may be multiple and varying (Baines et al., 2007; Johnson and Mena, 2008).
- The increased reliance on suppliers (i.e. suppliers' technology, capacity or innovation) due to long-term support promised for the offering (Johnson and Mena, 2008).
- The fact that sometimes the product is provided by one organisation, while service and support are provided by other members of the network (e.g. Cisco in Cohen et al., 2006).
- The increased levels of risk for the manufacturer generated from the asset-ownership and promised availability (Davies et al., 2006).
- The need for alignment of product and service design with the design of offerings (Aurich et al., 2006).

- The need for alignment of organisational, individual and network level metrics towards the effective delivery of servitized offerings (Lockett et al., 2011).

Apart from the contingent characteristics of the offerings, there are additional difficulties for manufacturers, particularly related to the management of services from external suppliers. Services are hard to evaluate in advance of purchasing as the production and consumption of services happen at the same time (Wynstra et al., 2006). Therefore, the supplier selection process is relatively more subjective than product supplier selection – most of the time the process is entirely dependent on the experience of decision making managers (Syson and Perks, 2004). Services are difficult to quantify in terms of costs and as a consequence they are difficult to price (Van Echtelt, 2004). Additionally, it is difficult to assess the value gained from the service in relation to the price at which service is purchased (Axelsson and Wynstra, 2002). In terms of organising the contingencies in the extant literature, two main categories are identified. These are:

- *Long-term relationships:* Servitized offerings tend to have long life cycles. This in turn results in closer relationships with network members and also increases the complexity of the network (Bastl et al., 2012; Penttinen and Palmer, 2007; Tuli et al., 2007). Coupled with these, is also the need to develop the metrics to align the different stakeholders towards the successful provision of the offering (Lockett et al., 2011).
- *Service orientation:* By definition, servitization requires closer links to customers – referred to as customer centricity (Galbraith, 2002). This stems from the inclusion of services which requires a continuous interaction with customers through the deployment of various services. These do not only include repair and maintenance services but also technology related services such as prognostics and diagnostics. In general, for manufacturers, these services tend to be new business fields which in turn cause uncertainty and risk at various levels during the purchase, management and evaluation of services (Davies et al., 2006; Tuli et al., 2007; Windahl and Lakemond, 2006).

Table 7 illustrates and positions the contingencies across a selected number of publications.

Table 7. The contingencies in the extant literature

	Bastl et al. (2012)	Lockett et al. (2011)	Tuli et al. (2007)	Penttinen and Palmer (2007)	Windahl and Lakemond (2006)	Oliva and Kallenberg (2003)	Davies et al. (2006)	Vandermerwe and Rada (1988)
Long-term relationships								
Increased network complexity	√	√	√	√	√		√	√
Increased reliance on partners	√		√	√	√			
Alignment of metrics		√				√		
Service orientation								
Customer centricity		√	√	√		√	√	√
Increased risks and uncertainties	√		√	√	√	√	√	√
Evaluating and managing services	√	√		√			√	

The previous two sections identified the expected outcomes and the contingencies of servitization respectively. It is now necessary to review and position the studies which focus on the IOR aspect of servitization. This is the focus of the next section.

2.2.4 The role of IORs in the provision of servitized offerings

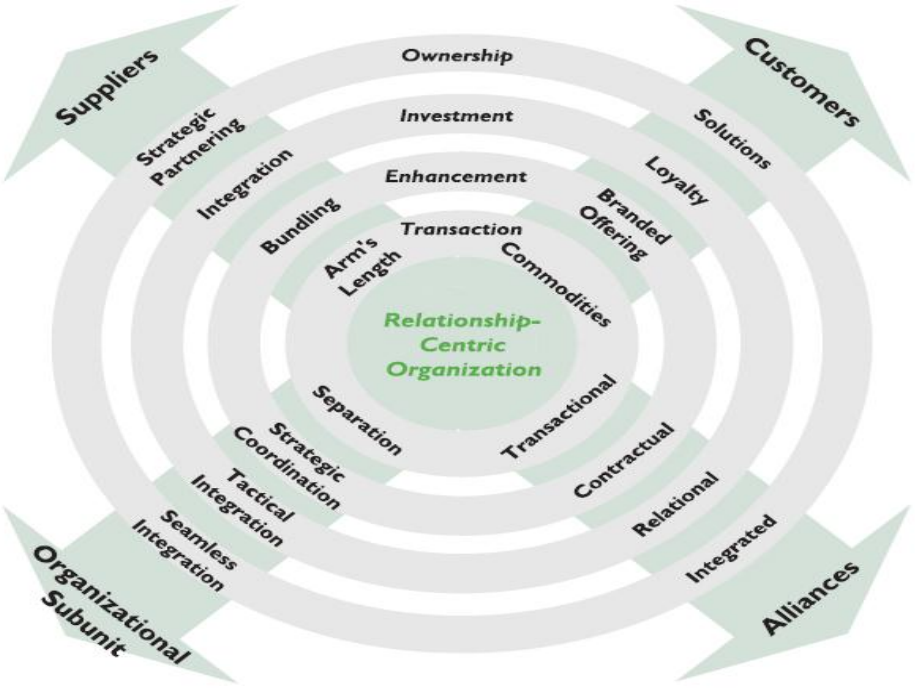
Numerous studies examined the transition of manufacturing firms into product-service providers (e.g. Davies et al., 2006; Oliva and Kallenberg, 2003); however, little research has been undertaken to find out its implications on the network[2]. Mostly, the extant studies focus on the implications of servitization on the organisation itself. For instance, Vandermerwe and Rada (1988) state that manufacturers which add more value to their offering by integrating services face a change in their core businesses. The authors categorize these changes into three stages: (1) the company is either in products or services business; (2)

[2] Please see Table 7 for an overview of the articles which investigated the IORs in servitization context.

products and services are bundled in offerings; and (3) offerings become a complex solution including various product and service elements. Similarly, Davies et al. (2003) illustrate the change process of manufacturers towards solution provision as a gradual process rather than a radical one. Their research shows three levels in the provision of servitized offerings. The first level is about building a new organisational face to the customer which will naturally promote and support the interaction with the customer. Here, the adaptation towards the needs of the customer becomes quintessential. Above all, customer relationship management becomes the key purpose. The second level is about building the back-end operations to support the product-service offering. Product-oriented companies need to develop the capabilities to manage the services and likewise service-oriented companies need to develop the capabilities needed to manage the products. The third level is reached when the product-service offering occupies a large percentage of the organisation's business. At this level organisational restructuring occurs, forming a single point of contact with the customer which is termed as a customer facing unit. However, those studies tend to focus on the internal processes, functions and capabilities of the focal firm rather than the network level relationships.

In a related study, Martinez et al. (2010) investigated the change process of a servitization provider through the lens of a provider and two of its suppliers. Their study has found empirical evidence that supports the notion that manufacturers need to change the way they manage their relationships with suppliers and customers due to the introduction of servitization. This change is characterized in terms of cooperative norms of behaviour, greater know-how and information exchange, relationship transparency, mutual adaptations and tighter operational linkages (Cannon and Perreault, 1999; Dyer and Singh, 1998). This finding is also supported by other studies on marketing discipline (e.g. Windahl and Lakemond, 2006) and on operations management discipline (e.g. Baines et al., 2009a). Windahl and Lakemond (2006) investigated how and to what extent network relationships facilitate or hinder the development of integrated solutions. In so doing, they identified six factors which are paramount to integrated solutions' development: 1) the firm's position in the network; 2) the

strength of the relationship amongst different actors; 3) impact on existing internal activities; 4) solutions' impact on customer; 5) firm's network horizon; and 6) external determinants. Gulati and Kletter (2005) also emphasize the importance of inter-organisational relationships for the development of solutions. They introduced the term "relationship-centric organizations" which refers to the companies that invest in their relationships and regard their strategic relationships as long-term investments. In general, the authors claim that better performing firms are eager to outsource their central activities to external partners whose expertise is proved. In this way, these firms can focus on the central activities that they are best at and the ones which are their distinguishing trade. Meanwhile, they are also broadening their customer base by offering new products and services – mostly in partnerships with other firms. They are doing this by forming customer solutions in the face of new customer demands. Therefore, it is claimed that firms have managed to decrease their costs by "shrinking their core" and increase their earnings by "expanding their periphery" (Gulati and Kletter, 2005). Figure 3 illustrates this concept.



(Gulati and Kletter, 2005, p. 80)

Figure 3. The relationship-centric organisation

Galbraith (2002) and Davies (2004) also stress the importance of relationship management in a servitization context, especially when offerings move from being 'product-oriented' towards being 'result-oriented'. Davies (2004, p. 753) even argues that *'for many firms, the biggest challenge will be developing the capabilities to integrate different pieces of a system provided increasingly by an external network of specialized component suppliers, subcontractors and service providers'*. However, the studies mentioned above (i.e. Davies et al., 2006; Oliva and Kallenberg, 2003) all collected their empirical data from the focal firm, neglecting the supplier and customer firms. Martinez et al. (2010) take a further step to investigate the implication of servitization on supplier organisations; however, this aspect is not the central focus of their research but rather a part of other core themes. In a recent study, Bastl et al. (2012) use Cannon and Perreault's relationship connector's framework to analyse the behavioural expectations amongst a manufacturer and two of its suppliers. This study is useful in terms of setting the foundations for a theoretical framework to analyse the inter-organisational relationships in a servitization context. The results of their case study show that there are substantial implications for servitization on the relationships with suppliers which are also in line with the findings of Penttinen and Palmer (2007). However, Bastl et al. (2012) also document the implications in detail, saying that servitization:

- drives an open information exchange with increased frequency and communications channels
- results in closely coupled operational linkages
- creates relational mechanisms which act as substitutes for to contractual mechanisms
- establishes formalized cooperative norms with greater reliance on relational mechanisms which results in higher levels of relationship adaptation

It is also argued that the implications even differ between the two suppliers based on the type of their relationships, i.e. arm's length vs. strategic partnership (Bastl et al., 2012). The issue then is to clearly define what is meant by a supplier or a partner. Similar to other studies that investigate the implications of servitization on relationships (e.g. Lockett et al., 2011; Martinez et al., 2010), Bastl et al. (2012) also focused on the changes in supplier relationships only. In addition, the foci of these studies were on the relationships which were predefined by the researchers (e.g. the triad study of Bast et al., 2012). In other words the research setting for the relationships were defined by the researchers before the empirical study. Nevertheless, Windahl and Lakemond (2006) argued that researchers need to follow the phenomena as it unfolds to capture the key relationships. This process approach to network studies is also advocated by Matthyssens and Vandenbempt (2008) and Ulaga and Eggert (2006).

In an effort to better understand the relationships in servitization, the extant literature identifies a number of attributes which arguably characterize IORs in a servitization context. These are illustrated in Appendix A in detail. A detailed investigation of the studies shows that the empirical studies which explicitly focus on IORs in servitization were initiated in 2006 by Windahl and Lakemond (2006) and increased in number thereafter. In addition, their study is one of the first attempts to address the calls to identify specific variables that influence the provision of servitized offerings (Sawhney, 2006). To this end, six attributes of relationships are identified: *the firm's position in the network, the strength of the relationship amongst different actors, impact on existing internal activities, solutions' impact on customer, firm's network horizon, and external determinants* (Windahl and Lakemond, 2006). Despite the richness of the case study findings, their study lacks a general theoretical framework within which to organise the emerging attributes in a meaningful and coherent manner. For instance, the external determinants attribute is related to the contextual factors that emerged in the environment during the provision of the integrated solutions project. Another attribute, impact on existing internal activities, is related to the outcomes of the relationships rather than the nature or characteristics of the

relationships. The lack of theoretical focus is also evident in the articles that followed (e.g. Johnsen et al., 2009; Lockett et al., 2011). An exception is Bastl et al. (2012) whose article is important in terms of setting the foundations of a theoretical framework for relationships in a servitization context.

2.2.5 Summary of the Servitization Section

This chapter served as a review of the servitization literature. In the first sub-section, a review on extant servitization literature and related streams was conducted to identify a suitable definition for the purposes of this study. As a result three main literature streams were identified: servitization, product-service systems and solutions. The extant definitions were then discussed and identified that in general, all three domains adopted a product-centric view of the concept for its description. This is evident regardless of whether the concept is defined as 'a trend' (Brady et al., 2005; Galbraith 2002) or 'an innovation' (Baines et al., 2009a; Neely, 2008) or 'a strategy' (Mont, 2001; Vandermerwe and Rada, 1988). These definitions fall short in describing the relational nature of servitization which is underpinned by the longer-term life of the offerings. Thus, building on Tuli et al. (2007), I adopt a relational process view to define servitization as:

> *longitudinal relational processes, during which a provider integrates goods, services and knowledge components into unique combinations that are aimed at meeting customers' evolving business needs.*

Consequently, I use the original term servitization to describe the phenomena and operationalize the above mentioned definition for its description throughout the rest of the thesis. Additionally, I will use the term 'offering' to explain the product-service mix provided to the customer.

Following the adoption of an appropriate definition, the next two sections focused on identifying the expected outcomes (i.e. benefits) and genuine characteristics (i.e. contingencies) of servitization. This resulted in the grouping of benefits into three classifications: revenue enhancing, value enhancing and

sustained benefits. For the contingencies, two main themes were identified: long-term relationships and service orientation.

The last review section of this chapter focused on studies investigating the role of relationships in servitization. Appendix A shows a comprehensive list of articles that studied the implications of servitization for inter-organisational relationships. A number of conclusions could be drawn from these studies, as listed below:

- Extant studies on servitization unanimously acknowledge the important role of networks and relationships for the successful provision of servitized offerings (Bastl et al., 2012; Cohen et al., 2006; Davies et al., 2006; Galbraith, 2002; Johnsen et al., 2009; Lockett et al., 2011; Oliva and Kallenberg, 2003; Tuli et al., 2007; Vandermerwe and Rada, 1988; Windahl and Lakemond, 2006)
- Despite the frequent mention of the importance of inter-organisational relationships, there is only a handful of studies which explicitly focus on this topic (e.g. Bastl et al., 2012; Johnsen et al., 2009; Lockett et al., 2011; Windahl and Lakemond, 2006)
- Amongst these studies there is a divide between marketing literature focusing on customer-manufacturer relationships (e.g. Tuli et al., 2007) and operations management literature focusing on manufacturer-supplier relationships (e.g. Bastl et al., 2012).
- A close investigation of the identified relationship characteristics shows a lack of theoretical framework (Bastl et al., 2012). This, in turn, results in the inclusion of characteristics which are related to the structure or strategy of the organisation rather than its relationships (i.e. Windahl and Lakemond, 2010)
- Importantly the extant literature is dominated by the manufacturer's point of view (cf. Tuli et al., 2007) – the customers', suppliers' and the view of partners are missing. In particular, there is a need to understand the imperatives for customer firms which purchase servitized offerings as opposed to product offerings (Kowalkowski, 2011; Tuli et al., 2007).

In the light of these conclusions, firstly, there is an emerging need to conduct empirical research by considering the network as a whole. This is rather important in order to explore and describe the key relationships as they unfold over time after the introduction of servitization. With this in mind, there is a need to move away from a narrow focus on customer or supplier relationships only. Secondly, in line with the recent calls for a more customer focused approach to servitization (Storbacka, 2011; Tuli et al., 2007), there is a need to emphasize the customers' perspective over the manufacturer's point of view. This is purely because, by definition, the aim of servitization is to satisfy customers' evolving needs. It is important to note such an approach could only be achieved through developing and managing close relationships with customers to address those needs. Thirdly and finally, the extant literature shows that there is a need to adopt a comprehensive theoretical framework to study the IORs in the context of servitization (Bastl et al., 2012). The lack of theoretical framing in the extant studies showed a lack of coherence in the identified characteristics (see Appendix A).

The reviewed literature on servitization suggests that there are two main contingent characteristics (i.e. long-term relationships and service orientation) of servitization that differentiate servitized offerings from the traditional product-based offerings. These are both closely linked to IOR management. For instance, the literature on general management classifies services such as repair and maintenance as tacit know-how (Teece, 1986) which are best deployed through relational exchanges amongst the network members as opposed to transactional approaches (Helper and Levine, 1992; Zajac and Olsen, 1993). In the light of these, it is repeatedly suggested in servitization literature, that the most effective way of facilitating the provision of servitized offerings in a network is through the effective and proactive management of inter-organisational relationships (IORs) (Bastl et al., 2012; Johnson and Mena, 2008; Lockett et al., 2011). This research is also built on this assertion. Thus, a succinct definition for what is actually meant by IORs should be defined before proceeding to other concepts.

2.3 Inter-organisational Relationships

In the light of the reviewed literature on servitization, there are only a handful of studies related to the implications of servitization on relationships (see Chapter 2.2.4). As a result, this literature is characterized as being at an 'infant' stage to provide a sound foundation for the study of IORs. Thus, there is a need to broaden the literature search to the more general domain of management in order to better understand and position the way IORs are studied. Therefore in this chapter, I review the literature on IORs in the general management context in order to better understand the research settings for this phenomenon. My primary aim is to draw conclusions from these studies which will then inform the research questions and conceptual framework. In order to do so, firstly I discuss the extant definitions and conceptualisation of IORs and networks. Next, I draw on the need to move away from one-dimensional conceptualisations of IORs towards a multi-theoretical one, and present and justify the adoption of Cannon and Perreault's (1999) framework as an appropriate lens to study IORS in the context of this research. Then, I discuss the research settings for IOR literature which are broadly categorized into three main structural configurations: dyadic, triadic and network structures.

2.3.1 Conceptualising inter-organisational relationships

IORs, as a research topic, are positioned at the intersection of various disciplines such as strategic management, purchasing, manufacturing, marketing or logistics (Defee et al., 2010). This stems from the fact that IORs are composed of various complex soft (e.g. trust, commitment, power) and hard (e.g. technical systems, product exchange, financial outcomes) factors that are closely intertwined. The literature on IORs is huge (Anderson and Narus 1990; Ring and Van de Ven, 1994; Whipple et al., 2002). The main reason is that the term itself is essentially nebulous. It can mean anything from customer relationships, to alliances or business consortia, to joint ventures. Therefore, the extant literature proposed a number of dimensions within which IORs can be typified. These can be based on the structure of the relationship in terms of

dyads, triads or networks (Choi and Wu, 2009a). In the case of a dyadic structure, relationships focus on interactions between two organisations. In the case of triads, the focus is on the direct or indirect interactions between three members of the network. In the case of networks, the focus is generally on the characteristics of those networks. In a similar unidirectional manner, IORs are characterized based on their governance mechanisms in terms of formal or informal. Also IORs could be distinguished as mandated or voluntary relationships (cf. Warren, 1967; Whetten, 1981). Alternatively, relationships could be characterized by their respective nature of exchange. Commonly, this is based on a dichotomy of transactional vs. relational relationships (Anderson and Narus, 1984; Dwyer et al., 1987; Gundlach and Murphy, 1993; Hutt and Speh, 2001; Macneil, 1980; Moller and Torronen, 2003). On the one hand, transactional relationships are characterized as short-term, commodity, adversarial, arms-length and superficial interactions with low levels of trust, communication, information exchange and benefit, or risk sharing (Anderson and Weitz, 1992; Eggert and Helm, 2003; Heide and John, 1992; Morgan and Hunt, 1994). On the other hand, relational relationships are characterized as long-term, strategic, relational and collaborative interactions with high levels of trust, communication, information exchange and benefit, or risk sharing (Heide and John, 1992). In essence, various theories underpin these typologies which are briefly discussed in the following paragraphs in order to draw conclusions to conceptualise and define IOR within the context of this research.

Due to the fact that SCM, as a research field, is in its infancy and lacking specific theories developed for the purposes of this domain, it is seen that many scholars have borrowed theories from other contexts (Defee et al., 2010). Amongst these, organisational theories from micro-economics and strategy disciplines were identified as the main sources (Defee et al., 2010; van Hoek et al., 2010). In particular, Transaction Cost Economics (TCE) and Resource Based Theory (RBV) emerge as the most frequently used theories within this domain (Defee et al., 2010; van Hoek et al., 2010).

Transactional Cost Economics (TCE) (cf. Williamson, 1975; 1985; 1991) has been predominantly used to study make-or-buy decisions within the field of IOR. It argues that the costs and difficulties associated with market transactions could favour hierarchies (i.e. in-house production) or markets (i.e. outsourcing) (Wlliamson, 1975) depending on the nature of the transaction. Central to this notion is the focus on how an organisation should organise its interactions so as to minimize its production and transaction costs. However, TCE falls short in explaining the third option, which is to partner with an external organisation to provide a product or service. This was later acknowledged by Williamson (1991) and termed a 'hybrid form'. However, the theory has been repeatedly criticised by many authors from various disciplines in relation to excessive reliance on opportunism and the neglect of organisational capabilities (e.g. Kogut and Zander, 1992; Langlois, 1992) and also the lack of a social interaction dimension (Blau, 1964). Based on this, it can be argued that TCE is deemed more appropriate to explain transactional relationships (Barringer and Harrison, 2000). Resource Based View (RBV) theory, on the other hand, sees the firm as a unique bundle of assets and resources which, if employed in distinctive ways, can create competitive advantage (Barney, 1991; McIvor, 2009; Peteraf, 1993). More recently, a number of studies have used both TCE and RBV as a lens to study relationships (e.g. Barthélemy and Quélin, 2006; Marshall et al., 2007; McIvor, 2009). Amongst these studies, McIvor (2008) found that using TCE and RBV collectively may not always result in consensus. Hence they are found to be contradictive under certain conditions. For instance when the potential for supplier opportunism is low and the resource is critical to competitive advantage, TCE suggests outsourcing but RBV suggests in-house production. Despite these later attempts, these theories are initially developed as a lens to investigate organisational phenomena, therefore are rooted in organisational boundaries. In other words, the levels of analysis for both TCE and RBV are at the organisation level. However, by their nature, IORs occur outside organisational boundaries. Thus, the extant conceptualisations of relationships within theories related to interaction, exchange or networks better identify with the nature of IORs. These are discussed in the following paragraphs.

Within this perspective, Social Exchange Theory (Blau, 1964; Emerson, 1976; Thibaut and Kelley, 1959) and Social Network (cf. Wasserman and Faust, 1994) are frequently used for the study of IORs in the general SCM field. Social Exchange Theory (SET) originates from social psychology and is used both at personal and organisational levels. It posits that all relationships are formed as a result of cost-benefit analysis and the comparison of alternatives. It argues that the essence of every relationship is interaction (Thibaut and Kelley, 1959). By interaction it is meant that the organisations or individuals emit behaviours in each other's presence, they create products for each other and they communicate with each other (Thibaut and Kelley, 1959). The theory further states that the future of any relationship is contingent upon the rewarding reactions of the parties involved towards each other.

Linked to this conceptualisation, Social Network Theory also takes into account the network perspective when conceptualising relationships. Within this perspective, it is argued that a relationship is a collection of ties amongst the pair of actors (Wasserman and Faust, 1994). These ties can range from personal relationships to business transactions. Interestingly though, the Organisational Design perspective (Van de Ven, 1976) suggests that IORs are independent identities outside organisational boundaries. In addition, it suggests IORs should be defined as a social action system on the premise that they exhibit the basic elements of any organised form of collective behaviour (Van de Ven, 1976).

Another important theoretical contribution to the study of IORs has been developed by the Scandinavian Industrial Marketing and Purchasing group and is known as the IMP approach (Ford et al., 1998; Håkansson, 1982; Håkansson and Snehota 1989). Within this approach it is argued that no business is an island, thus firms and business relationships do not exist in isolation. The IMP approach emphasizes the role of the entire network and specifically its actors, resources and activities. Within this perspective, it is argued that relationships develop amongst companies when activities link, resources tie and actors bond with each other. This conceptualisation is used as a model in terms of actors,

resources and activities to study the relationships initially at dyadic (Brennan and Canning, 2002; Canning and Hammer-Lloyd, 2002) and later at triadic levels (Holma, 2009). The IMP perspective is “processual which means that relationships are viewed to emerge, evolve and end in a continuous and interactive process between the actors” (Holma 2009, p. 15). Therefore, the IMP research generally used qualitative, exploratory and descriptive case-based research for the study of networks in a longitudinal manner (Holma, 2009)

Another commonly used lens for the study of relationships is Resource Dependence Theory (RDT) which argues that organisations must interact with their environment to acquire critical resources which enable them to function and survive (Pfeffer and Salancik, 1978). This theory predominantly focuses on how the external resources of affect organisational behaviour (Pfeffer, 1982; Salancik, 1979). Here, power is seen as a key determinant of relationships and is closely linked to the resource dependency of one organisation to another. Thus, resources are seen as the basis of power. This theory differs from RBV which sees valuable, rare and inimitable organisational resources as the sources of competitive advantage (Barney, 1991). On the other hand, RDT assumes that one organisation cannot possibly have all the resources to sustain its competitive advantage. Therefore, RDT argues that organisations are in a constant search for increased power and reduced dependency with respect to other organisations in their market (Barringer and Harrison, 2000). Within this perspective, RDT provides an appropriate lens to study how firms enter into partnerships to make use of their complementary resources (Pfeffer and Salancik, 2003). However, RDT is also not immune to drawbacks and limitations. For instance, there is little in the way of explanation provided by RDT for the reasons why some firms prefer forming mergers or acquisitions, or the recruitment of personnel from competitors, or raising new capital to obtain new resources over alliance formation (Barringer and Harrison, 2000). In addition, similarly to other resource based theories, RDT focuses on the resources rather than competences and capabilities which enable the use and creation of valuable resources that sustain competitive advantage (Teece et al., 1997)

Various other theories were also used to study relationships. However this sub-section of the thesis is not aimed at discussing all the relevant theories that were used to study IORs but rather it serves as a discussion and synthesis of a number of the most frequently used theories and conceptualisations. In sum, I draw on a number of conclusions that emerged from the reviewed literature regarding the definition and conceptualisation of IORs:

1. An IOR is considered to be a separate identity outside organisational boundaries (cf. Van de Ven, 1976)
2. A relationship is formed through interactions or linkages amongst organisations (Thibaut and Kelley, 1959; Wasserman and Faust, 1994)
3. An IOR is not an entity which is purely controlled by one organisation only (Pfeffer, 1982; Salancik, 1979).
4. Naturally, a relationship is formed between two or more organisations (Håkansson and Snehota, 1995).
5. From a network perspective, a relationship is a collection of both direct and indirect interactions on the organisations involved (Thibaut and Kelley, 1959; Wasserman and Faust, 1994).
6. IORs are multi-dimensional. They could be vertical in the form of relationships with customers or suppliers and they can also be horizontal in the form of relationships with alliances, partners and joint ventures (Gulati and Kletter, 2005).
7. IORs are context specific and they cannot be readily transferred to other contexts (Ford et al., 1998; Håkansson, 1982; Håkansson and Snehota, 1989).
8. Importantly, there is no dominant theory for studying IORs, but rather multi-theoretical approaches are deemed appropriate (Cannon and Perreault, 1999; McIvor, 2000)

In conclusion, the extant definitions falls short in describing IORs in the light of the points stated above. For instance, Wasserman and Fraust (1994) define relationship as a collection of ties of a given kind among pairs of actors. This definition states that a relationship is formed through a collection of ties but

does not explicitly state the direct or indirect nature of these ties and neither does it explicitly state that relationships are outside organisational boundaries. Although these aspects of relationships are discussed, these scholars do not explicitly state them in their definition. Thus for the purposes of this research, I juxtaposed the extant conceptualisations proposed in the literature by Thibault and Kelley (1959), Van de Ven (1976) and Wasserman and Faust (1994) to define an IOR as:

> *An identity outside organisational boundaries which is a collection of direct or indirect interactions amongst the actors and organisations involved.*

Secondly, I comply with the calls for researchers to use a multi-theoretical approach to study IORs (Barringer and Harrison, 2000; Oliver, 1990). IORs are multi-disciplinary and complex phenomena made up of various social, structural and relational factors. The literature identifies various characteristics of relationships such as power (Pfeffer and Salancik, 1978), trust (Dwyer et al., 1987; Morgan and Hunt, 1994), adaptations (Håkansson and Snehota, 1995), information exchange (Anderson and Narus, 1984; Monczka et al., 1998), duration of transactions (Blois, 1996) and commitment amongst many. In an attempt to organise this increasing number of characteristics, Morris et al. (1998) identify 23 IOR variables from the literature. Rajamma et al. (2011) take a step further to identify 39 dimensions for relationships. In the light of this overwhelming number of factors, there is a need to converge these variables into meaningful categories to allow a more healthy analysis of IORs. Nevertheless, identification of these categories is not the aim of this thesis. To this end, I adopt Cannon and Perreault's (1999) framework for the study of IORs within servitization. The next section details the description and the rationale for the chosen framework.

2.3.2 The adoption of Cannon and Perreault's (1999) framework for the study of IORs

The article by Cannon and Perreault (1999) provided a multi-theoretical framework for the study of IORs which has later been used by other scholars (Penttinen and Palmer, 2007; Penttinen et al., 2010; Stewart et al., 2009). In particular, it has also recently been used in a servitization context by Bastl et al. (2012). The underlying aim of the Cannon and Perreault (1999) paper is to provide a more nuanced understanding of the nature of business relationships. In so doing, they challenge the existing linear view on relationships by adopting a numerical taxonomy approach. This approach allowed them to move away from one-dimensional conceptualisations which emphasize the positioning of relationships on one continuum whether in terms of relational vs. transaction, formal vs. informal or collaborative vs. adversarial. Within this understanding, Cannon and Perreault (1999) raise a striking concern with regard to extant studies which position IORs across one continuum while acknowledging the multi-dimensional, cross-disciplinary and multi-theoretical nature of such relationships. In addition, their study also acknowledges the importance of contextual and performance factors of relationships by identifying the availability of alternatives, supply market dynamism, importance of supply and complexity of supply as market determinants, and also identifying customer satisfaction and customer evaluation as the two dimensions of customer evaluations. In particular, they contribute to the literature by developing "an empirically grounded taxonomy of business relationship types using a large, representative sample of actual relationships between business customers and their suppliers as a basis [and by comparing] the empirical taxonomy with previous empirical research, other theoretically derived taxonomies" (Cannon and Perreault, 1999, p. 440). Drawing on extant literature and previous empirical research, they identify six relationship dimensions (or relationship connectors) to reflect the manner in which organisations interact with each other. These dimensions are information exchange, operational linkages, legal bonds, cooperative norms and buyer and seller adaptations. These are further discussed in the following paragraphs.

The first dimension is *information exchange* which is defined as expectations of open sharing of information that may be useful to the organisations that are involved in the relationship (Cannon and Perreault, 1999). With the advances in information and communication technologies, the frequent and quality flow of information amongst the organisations is seen as unquestionably vital for a relationship to function and survive (Barringer and Harrison, 2000). Information sharing has attracted a considerable amount of research interest and been studied through various theoretical approaches. Social Exchange Theory (Thibaut and Kelley, 1959) for instance argues that sharing of information allows the parties to understand the respective behaviours of their relationship partners. In addition, information sharing also plays an important role in TCE (Williamson, 1975) where decisions are made on the basis of information available to the organisations and a lack of information is likely to result in market failures. Relational Contracting Theory (Macneil, 1980) which pioneered the characterization of relationships in terms of transactional vs. relational, also argues that information sharing is a sign of relational relationships. In sum, there is consensus on the importance or relevance of information sharing on the relationships and there is also consensus that information sharing alone is not able to explain or describe IORs. On a further note, it has been argued servitization requires an open and multi-directional information exchange with increased frequency and extended communication channels (Bastl et al., 2012; Johnson and Mena, 2008).

The second dimension is *operational linkages* which are defined as the extent to which the systems and processes are linked in order to facilitate operations within the interacting organisations (Cannon and Perreault, 1999). For some inter-organisational relationships, the organisations interact without any close collaboration through the use of decoupled systems. This is mainly the case for transactional relationships where interactions are one-off and not repeated continuously. For strategic and partnership based relationships however, technical systems are coupled and adjusted for those relationships to accommodate a healthy and continuous interaction. In operations management, this dimension resonates with concepts of just-in-time manufacturing or quality

management approaches. Within the IMP approach, these are defined as technical bonds which are part of the *actors, resources and activities* framework that is used to describe a network within this theory (Johanson and Mattson, 1987). In the servitization context, operational counselling (cf. Tuli et al., 2007) or operational integration (cf. Davies et al., 2006) resonates with the dimension of operational linkages. In addition, extant studies showed that introduction of servitization facilitated the deployment of additional operational linkages in supply networks (Bastl et al., 2012; Johnson and Mena, 2008)

The third dimension is *legal bonds* which are defined as "detailed and binding contractual agreements that specify the obligations and roles of both parties in the relationship" (Cannon and Perreault, 1999, p. 443). These can range from formal relationships which are strictly regulated and closely managed, such as the business relationships in military defence industries (Johnsen et al., 2009) to relationships which are based on open contracts that allow flexibility and innovation. Various theories explicitly deal with legal bonds. Resource Dependency Theory (Pfeffer and Salancik, 1978) for instance, argues that contracts could be used to reduce environmental uncertainties. Linked to this, TCE also emphasizes the role of legally binding contracts in reducing the opportunistic behaviour of suppliers and also in limiting environmental uncertainty (McIvor, 2009). Bastl et al. (2012) is the only known study that studied role of legal bonds in a servitization context. Based on their case study, servitization causes increased exchange complexity which in turn makes the legal contracts ineffective to cope with day to day activities. Thus, it is argued that relational mechanisms, such as trust and mutual cooperation, act as complementary to legal contracts in servitization contexts. Nevertheless their study only covers the supplier relationships (i.e. manufacturer-supplier linkages). Thus there are no known studies that investigate the role of legal bonds for customer relationships in servitization context.

The fourth dimension is *cooperative norms* which refer to the "expectations the two exchanging parties have about working together to achieve mutual and individual goals jointly. […] Cooperative norms do not imply one party's

acquiescence to another's needs but rather that both parties behave in a manner that suggests they understand that they must work together to be successful" (Cannon and Perreault, 1999, p. 443). This dimension is interested in whether faults are treated as joint responsibility, or to what extent the parties are interested in each other's profitability, or their willingness to make cooperative changes (Cannon and Perreault, 1999). This dimension relates to several factors emerging in the extant studies regarding cooperation or commitment. For instance, it is argued that this dimension coincides with many of the variables identified by Macneil (1980) in his work on relational contracting, such as flexibility and solidarity. In addition, this dimension is also relevant to SET since this theory sees interactions occurring in a reciprocal, behavioural way (Anderson and Narus, 1990). Within the context of servitization, Bastl et al. (2012) provides evidence for the emergence of new relational norms between a manufacturer and its supply network. Nevertheless, their case study also shows that the actual manifestations of cooperative norms were rare and only based on the context and the relationship, therefore these norms were not uniformly applied to the network.

The last two dimensions are *buyer-seller adaptations* which are referred to as "investments in adaptations to process, product, or procedures specific to the needs or capabilities of an exchange partner" (Cannon and Perreault, 1999, p. 444). These can be adaptations in the form of customized products for specific customers or full-scale infrastructural investment to meet specific customer needs. This dimension is related to SET where it is defined as investments, also to TCE where it is defined as asset specificity, and also to IMP where it is defined as adaptations. Cannon and Perreault (1999) adopt the conceptualisation of IMP which sees adaptations as both exogenous and endogenous to relationships. Within the servitization context, it is argued that higher levels of adaptations occur due to the long-term nature of servitized offerings (Davies et al., 2006). Nevertheless, it was also argued that adaptations are especially evident with customer relationships as opposed to the suppliers (Bastl et al., 2012).

A list of the relationships' dimensions with their respective theoretical foundations is detailed in Table 8.

Table 8. The relationship connectors of Cannon and Perreault (1999)

Relationship Connector	Description	Theoretical foundations
Information exchange	Information exchange is an expectation of an open sharing of information that might be useful for both parties.	Social Exchange Theory (Thibaut and Kelley, 1959; Morgan and Hunt, 1994); Transaction Cost Theory (Williamson, 1985); Relational Contracting Theory (Macneil, 1980)
Operational linkages	Operational linkages capture the degree to which the systems, procedures and routines of both parties (for example customer and supplier) have been linked to facilitate operations.	IMP approach (Håkansson, 1982); Transaction Cost Theory (Heide, 1994)
Legal bonds	Legal bonds are detailed and binding contractual agreements that specify the obligations and roles of both parties in the relationship.	Resource Dependency Theory (Pfeffer and Salancik, 1978); Transaction Cost Theory (Williamson, 1985)
Cooperative norms	Cooperative norms reflect expectations the two exchanging parties have about working together to achieve mutual and individual goals jointly.	Social Exchange Theory (Thibaut and Kelley, 1959; Anderson and Narus, 1990); Relational Contracting Theory (Macneil, 1980)
Buyer and seller adaptation	Relationship-specific adaptations are investments in adaptations to process, product, or procedures specific to the needs or capabilities of an exchange partner.	IMP Approach (Håkansson, 1982; Hallen et al., 1991); Transaction Cost Theory (Williamson, 1985); Social Exchange Theory (Anderson and Weitz, 1992)

The relationship connectors as a whole have been used in various contexts since their introduction by Cannon and Perreault (1999). For instance, Stewart et al. (2009) utilized the relationship connectors to study the partnerships between public and private organisations in the context of disaster management. In another study, Penttinen et al. (2010) use the framework in a dyadic setting to assess the effects of electronic invoicing on a buyer-supplier relationship. In another study, Morris et al. (1998), drawing on the working paper of Cannon and Perreault (1999), used the framework in the context of

relationship marketing to analyse the behaviour of buyers and suppliers in terms of their attitudes and perceptions. Overall, Cannon and Perreault's (1999) study has been an influential article in the relationship literature which – according to Google Scholar – is cited by 1,253 articles (as of 8th March 2013).

Amongst the extant conceptualisations of IORs, Cannon and Perreault's (1999) framework possesses various features which comply with the purposes of this study:

- The framework consists of various theoretical foundations which are methodologically in line with the exploratory nature of this study and considering that the servitization literature is at a nascent stage (Bastl et al., 2012).
- The use of multiple theoretical lenses enables researchers to explain and describe the phenomena from complementary viewpoints. For example, TCE is claimed to have less explanatory power to describe relationship dynamics when there is relational exchange, whereas social exchange theory is more suited for explaining such relationships (e.g. Goshal and Moran, 1996; Ring and Van de Ven, 1992).
- Although, Bastl et al. (2012) use this framework to understand the changes only in upstream relationships, in other contexts it was also used for downstream relationships (e.g. Ordanini, 2011; Sanderson, 2008). Given that this research is primarily interested in all key inter-organisational relationships in the network of a manufacturing firm, a framework capable of explaining both downstream (i.e. customers) and upstream relationships (i.e. suppliers) is needed.

Thus, I posit that the Cannon and Perreault's (1999) framework is appropriate for the purposes of this study. Naturally, there exist a number of shortcomings within the framework. These limitations also need to be discussed in order to provide further clarity on the framework chosen. Firstly, the social aspects of inter-organisational relationships, such as trust or commitment, are not explicitly stated in the framework. These social aspects are significant when inter-

personal relationships are studied. However, these aspects are not within the scope of this thesis where the predominant focus is on the operational elements of IORs. Secondly, the framework looks at changes in the nature of relationships, thus emphasizing the 'what' of change with relatively less emphasis on the 'why' and 'how' of change. Thus, extra care needs to be taken to acknowledge the conditions or the context within which the relationship dimensions are impacted.

Cannon and Perreault's (1999) framework is adopted as a multi-theoretical lens to investigate IORs. However, at the same time it is also important to explore the research settings within which IORs are investigated in the general management literature. I refer to a research setting as the structure within which IORs are investigated. In other words, since IORs are outside organisational boundaries they should be studied within a multi-organisational perspective. For instance, some IORs might involve only two organisations for a short period of time whereas some IORs such as large scale consortiums or industry wide partnerships might involve hundreds of companies working for a project. Thus it is important to comprehend how different IORs require different research settings for investigation. To this end, the next section provides a detailed discussion and analysis of general management literature which is focused on the way in which inter-organisational relationships are studied. This is especially important, since servitization literature is relatively under-researched and lacks an in-depth explanation of implications for IORs. Thus, further investigation is essential at this stage to better explicate and position the research in terms of the relationship structures identified in the extant literature. This is the focus of the next section.

2.3.3 The extant research settings for IORs

IORs by definition occur between at least two organisations. Within this aspect, IORs have been studied in three main research settings: dyadic, triadic and network (or supply chain) structure. The IORs studied in the dyadic structures are the most researched area whereas the networks structure is the least

studied setting. In particular, network studies are concerned with network level changes, whereas dyadic studies only focus on the relationship between two firms and triadic studies focus on the relationships amongst three firms. These three structures (i.e. dyads, triads and networks) are the most used research settings to study inter-organisational relationships. Next, I review the literature on general management literature which uses these three structures as research settings to study IORs.

2.3.3.1 Dyadic Business Relationship Structures

This chapter explicitly focuses on investigating the research settings for inter-organisational relationships. Considering that no business is an island, nowadays firms are increasingly coupling with external organisations with the intention of focusing on core competitive advantage and outsourcing the rest (Gulati and Kletter, 2005). These relationships may range from alliances to corporate social responsibility partners (Oliver, 1990). Especially in the Western manufacturing industries, there is an increasing trend towards outsourcing and partnering in an effort to comply with the dynamics of globalisation, particularly the rise of low cost economies (Wise and Baumgartner, 1999). In turn, this increases the importance of relationship management in manufacturing organisations. Especially when these external organisations are considered to be strategic for the firm's business, they adapt to the changing dynamics of these relationships in order to have a healthy interaction. These adaptations are mainly studied in inter-firm adaptations or buyer-seller adaptations literature. Thus, a change in IORs is called inter-firm adaptation (e.g. Håkansson and Snehota, 1995; Holma, 2008). This refers to the specific changes made by a firm to meet the requirements of the exchange partner (Hallen et al., 1991; Mukherji and Francis, 2008). They are the defining characteristics of an ongoing relationship between organisations. The absence of inter-firm adaptations indicate an adversarial relationship based on transactional exchange (Woo and Ennew, 2004), whereas the presence of adaptations indicate the existence of an ongoing cooperative business relationship (Holma, 2008). This domain of

research is predominantly conducted in dyadic structures. Adaptations are generally studied in two stages: (1) during the formation of relationships in terms of changes to initiate the relationship (Dwyer et al., 1987) and (2) during the life cycle of the relationship in the form of improvements (Ford, 1980).

There are several reasons underlying the importance of 'inter-firm adaptation' as a research area (Hallen et al., 1991; Holma, 2008):

- The majority of inter-firm adaptations involve substantial investments by the firm.
- Adaptations have a crucial importance for suppliers in terms of securing long-term relationships with customers.
- Customers make significant investments in order to adapt the properties of their suppliers, especially when there is strategic dependency on those suppliers.
- The funds spent on the adaptations are not directly transferable, i.e. they are significantly customized. Eventually the firms become dependent on each other, increasing the difficulty of breaking away from the relationship.
- The adaptations improve the likelihood of a firm's survival in terms of responding to environmental changes.

Previous research has shown many forms of adaptations varying in size and functionality (Håkansson, 1982; Hallen et al., 1991; Holma, 2009). Customization of products is given as the primary example of inter-firm adaptation. A few examples include: order and delivery processes, stockholding, shipment processes, information exchange and contractual conditions. Most of the examples portrayed in the extant literature are mainly product and manufacturing related processes.

Adaptations are also related to individuals in their daily activities. In a service context, the production and consumption occurs at the same time. Therefore,

the provision of services, even for the same customer, is most likely to vary on different occasions (Axelsson and Wynstra, 2002). The service operations literature is replete with calls for the standardization of service provisions, similarly to product manufacturing processes (Menor et al., 2002). However – given the peculiar properties of services – customization is highly likely to occur through adapting to a particular customer at the point of service delivery. The challenge for organisations is to provide a stable, positive satisfaction regardless of changing customer expectations. At an individual level, this requires service personnel to have the ability to adapt to changing customer requirements on each service delivery occasion. At a corporate level, managers should put into effect the related processes and mechanisms to make sure that their staff is adequately trained and resources are in place to support the adaptation process.

Extant studies, such as those of Hallen et al., (1991) and Holma (2008), have shown the key importance of adaptability to firm performance in a continuously changing business environment. Hitherto, these studies have focused on inter-firm adaptation between two firms – dyadic-relationships. In particular, dyadic structures are evident for product-based offerings where a customer and provider engage in a transactional relationship (Hallen et al., 1991). Next, the triadic network structures are discussed.

2.3.3.2 Triadic Business Relationship Structures

A triadic relationship structure is an intermediate level of analysis consisting of three actors and their relationships – which is larger than a dyadic structure but smaller than an extended network structure (Choi and Wu, 2009a). Triadic studies originated from sociology (cf. Thibault and Kelley, 1959). A triad in sociology is defined as a group of three individuals who are connected to each other in order to complete a task or activity (Thibault and Kelley, 1959).

The study of triads, as well as dyads, was pioneered by German sociologist Georg Simmel at the end of the 19th century (Choi et al., 2002). Although the concepts of dyadic and triadic relationships originated from the same theory, the

former received much more attention and the number of scholarly articles on dyads is much greater than that of triads. Nevertheless, recent years have seen a great deal of interest towards triadic business settings in the SCM discipline mainly through the works of Choi and Wu (2009a, b, and c).

One of the earlier studies in the SCM discipline is that of Philips et al. (1998) which is a theoretical study of the role of loyalty between the members of a triad using balance theory. Within the earlier studies on triads, there is an emphasis on two-tier triads which are based on one buyer and two suppliers. For instance, Wu and Choi (2005) conducted a multiple case study of triads to extend the understanding of supplier-supplier relationships and performance implications for suppliers and a buyer in the buyer supplier triad. In another study, Dubois and Frederiksson (2008) conducted a single triadic case study with a manufacturer and its two suppliers in the automobile industry in order to explore the concept of triadic sourcing as opposed to network or parallel sourcing.

On the other hand, more recent studies, despite being only a few, have studied three-tier triads consisting of suppliers, buyers and customers. An example is that of Li and Choi (2009) whose work is a theoretical study to understand the relationship structures prior, during and post outsourcing in a service context. In one of the few known about studies in the services industry, Holma (2009) used a triadic approach to inter-organisational change. This study shows there are a limited number of studies explicitly using a triadic approach – and amongst those few studies, the research is investigated from a dyadic perspective although the unit of analysis is a triad (e.g. Havila, 1996; Trimarchi, 2001).

In one of the early triadic relationships studies, Yamagishi et al. (1988) looked at the distribution of power in differently organised exchange networks. They found that the locus of power in networks is determined by the nature of the connections[3] as well as the scarcity of resources. Havila (1996) studied the role of intermediaries in different types of triads. In so doing, she distinguished

[3] Yamagishi et al., (1988) used three classifications, namely: positive, negative and mixed power relations.

between unitary triads which work like a group and a serial triad which acts like a series of dyads. Madhavan et al. (2004) quantitatively studied triads in competitive and cooperative networks. They show that there is a tendency by firms in their research to form transitive triads. Transitive triads are triads in which all actors have direct ties with the other two firms. Gentry (1996) investigated the perceived importance and degree of participation of third party organisations in buyer-seller relationships. In that triadic study, she found that third party involvement enhances strategic partnerships. By this, she emphasized the importance of five partnership dimensions: long-term commitment, open communication, continuous improvements, risk sharing and incentives for the relationship.

In a business context, scholars consider a triadic relationship to be the interaction of three different firms (Choi et al., 2002). These relationships may have direct and/or indirect connections. Accordingly, a triad may be characterized by four components: 1) reciprocity (Caplow, 1956) – triads may have indirect reciprocity whereas dyadic studies only consider direct reciprocity; 2) the role of the third actor – the last actor may have different roles in the relationship such as *tertius gaudens*. The concept of *tertius gaudens* has been developed into the well-known notion of a "structural hole" (Burt, 1992). A structural hole is generated when one actor is connected to two others which are not connected (Choi and Wu, 2009a). Figure 4 illustrates a triad with a structural hole.

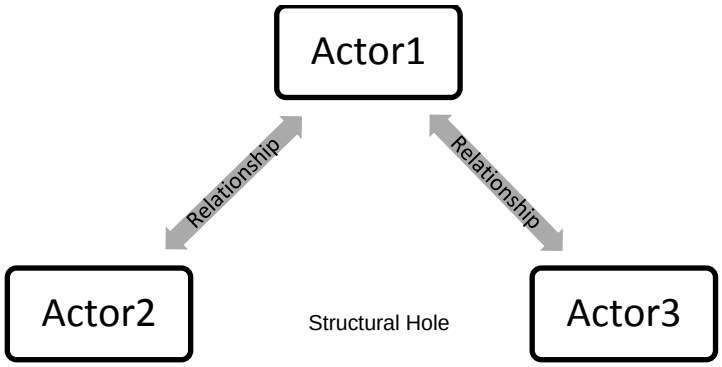


Figure 4. A triad with a structural hole (between Actors 2 and 3)

3) relationship unstableness – triadic relationships are subject to more changes due to their unstable nature compared to dyads (Simmel, 1908); and 4) coalition formation – in any group of three there is a tendency among its members to develop to make a coalition, therefore resulting in the destruction of the triad and the formation of a new dyad (Caplow, 1968).

There are common themes emerging when the triadic business relationship literature is investigated. A related conclusion is that there are no known studies that investigate triadic relationship structures in the context of servitization. Interestingly, the nature of exchange in the literature on triads is either only product (i.e. Choi et al., 2002; Dubois and Fredriksson, 2008; Philips et al., 1998; Rossetti and Choi, 2008) or service (Holma, 2009; Li and Choi, 2009) not an amalgam of both. Thus, this is a gap to address for further research.

Nevertheless based on the studies of Holma (2009) and Bastl et al. (2012), service based offerings was seen as having triadic network structures, whereby the product component of the offering is provided by one organisation and the service component by another. Of further note is that the triadic literature is generally dominated by the study of two-tier triads. In other words, the relationship between a manufacturer and its two suppliers has been the dominant setting within which triads were studied. This shows that there are ample research opportunities for the investigation of three-tier triadic research structures. Most notably, the extant triadic literature has contributed to the relationship studies through the concept of indirect ties and structural holes. However, previous triadic studies mainly focus on the pre-determined relationship structure and its dynamics. In particular, triads by their inherent characteristics of direct and indirect ties are argued to be the simplest representation of networks (Li and Choi, 2009). Scholars in this field argue that the same cannot be said for dyadic structures since they do not involve the indirect effects of actors or linkages (Choi and Wu, 2009a, b, c). This understanding is essential in the context of SCM. Nevertheless, some scholars have taken a step further than triads to investigate the network as a whole. The

next section is a brief discussion of studies pertaining to the investigation of the relationships at the network (or supply chain) level.

2.3.3.3 Supply Network Relationship Structures

The field of SCM is an emerging field and still in its infancy (Burgess et al., 2006). In a review of SCM literature, Burgess et al. (2006) show that conceptual and methodological foundations are still debated amongst scholars and there is insufficient consensus on the definition of the term *supply chain management*. They further state that "several disciplines claim ownership of the field; contextual focus is mostly on the manufacturing industry; predominantly process conceptual framing prevails; research methods employed are mostly analytical conceptual, empirical surveys or case studies; the positivist research paradigmatic stance is prevalent; and theories related to transaction cost economics and competitive advantage dominate" (Burgess et al., 2006 p. 703). Since SCM literature is an emerging field, there is only a limited number of studies that investigate supply chains as a whole (van Hoek et al., 2010). To this end a number of network studies are discussed next. Considering that the objective of this research is to explore the implications of servitization on the network, a particular emphasis is placed on the studies that investigated network level changes.

Markovitz-Somogyi et al. (2009), building on the works of the Global Supply Chain Framework (Lambert et al., 2006), propose 10 guiding principles for managing the implications of environmental initiative on a network perspective. The initiative in their case is called a 'green supply chain' which is aimed at reducing the ecological impact of industrial activity without jeopardizing its quality, cost and performance. These guiding principles are predominantly centred on people issues such as culture, resistance to change, leadership influence and communication of messages to each layer. However, their principles are, by and large, directed towards the change in the organisation, and are all informed by the general change management literature.

On another network study, Ford and Greer (2009) investigate the difference between supply chain related (SCR) changes vs. non-supply chain related (NSCR) changes in their quantitative research. According to their classification, change activities which are directly related to internal organisation were listed as NSCR changes (e.g. corporate restructuring, statistical process control, new job scheduling process, new safety programme). The change activities which are directly related to managing upstream and/or downstream relationships were listed as SCR change (e.g. customer feedback system, supplier rating and evaluation system, supplier partnering initiative, outsourcing of assembly process etc.). In order to analyse their findings, they used a well-established organisational model (Kurt Lewin's three phase change and process factors, 1947). Their results show that a much lower level of success is realized during the implementation SCR changes. An indicator for this result is the use of less management control activities for NSCR change implementation (Ford and Greer, 2009). Given those findings, they point out the need for more studies investigating changes at the supply chain level. *"More research will be needed on change processes and implementation to increase the knowledge base that managers will need to achieve their desired goals"* (Ford and Greer, 2009, p. 59).

Provan et al. (2007) conducted a comprehensive review of empirical studies on inter-organisational networks. As part of their findings, they classified network studies in two different but complementary categories; 1) *Ego-centric network studies* that are interested in the ways in which the involvement of an organisation into a network affects its actions and outcomes. These studies mainly view the network from the focal organisation point of view. On a related note, Provan et al. (2007) define an ego-network as the network of companies that are directly in contact with the focal firm. In other words, an ego-network refers to the first-tier suppliers, customers and partners of a firm. 2) *Whole network studies* that focus not on a single organisation but on the entire network by investigating the actions and outcomes of the entire network as a whole. For example, instead of investigating the influences of centrality of an organisation

to its performance, whole network studies would focus on the overall network density or centralisation as a whole (Provan et al., 2007).

Amongst the limited network literature, scholars of this field rely heavily on general management theories and frameworks in their studies (e.g. Ford and Greer, 2009; Ross et al., 1998; van Hoek et al., 2010). This is due to the notion that supply chain is an emerging field. In one of those studies, van Hoek et al. (2010), in an effort to build a framework to explore change in the supply chain, identify some major gaps in the supply network related literature, such as the consideration of time, preservation or destruction of change, power within the organisation and consideration of diversity at a business unit, organisational or national level. Above all they state that *"what has been considered by the researchers in the supply chain domain is akin to the content (or "what?") of change rather than the process of changing"* (van Hoek et al., 2010, p. 233).

In conclusion, this section served as a discussion of the supply network literature which is found be a growing field but still in its infancy. An emergent consensus within this domain is the challenge of conducting network studies in terms time, resources and access (Burgess et al., 2006; van Hoek et al., 2010). As a result, there is only a limited number of publications in high quality journals and within those studies, scholars in this field have mainly focused on the content of change (e.g. Ford and Greer, 2009; Ross et al., 1998) and heavily relied on general management literature for borrowing theories and frameworks; (Markovitz-Somogyi et al., 2009; van Hoek et al., 2010).

2.3.4 Summary of the IOR Section

In sum, this chapter served as a review of the inter-organisational relationship (IOR) literature while mainly focusing on understanding the research settings within which the relationships are studied. In doing so, I first define what is meant by IORs in this research by drawing on extant conceptualisations. Then, I reviewed the literature, focusing on relationships between two organisations mainly studied as inter-firm adaptations in a dyadic structure. This literature is found to be the most researched area in the IOR domain. In particular, this

literature reveals the importance of IORs to managers by pointing out the amount of investment and time spent on building relationships. In the context of my research, this literature shows that product-based offerings are mainly studied in dyadic network structures based on transactional relationships (Hallen et al., 1991). In the servitization literature, Martinez et al. (2010) and Lockett et al. (2011) are examples for utilizing a dyadic view on relationships.

Next, I briefly discussed the triadic network structures. The main contribution of this field is the importance of indirect ties and structural holes in network relationships. Scholars of this field even claim that the smallest unit of analysis of a supply chain needs to be a triad because of the need to understand indirect ties (Choi and Wu, 2009a, b, c). It has also been argued that service-based offerings are delivered in a triadic setting (Bastl et al., 2012; Holma, 2009). However, in essence, the main focus of triads is the changing dynamics in a *predetermined* group of relationships. Therefore, the focus is not on the process of changing in a context where actors are determined by the process but are defined by researchers. For example, in one of the only known studies of relationships in the servitization context by Windahl and Lakemond (2006), their first integrated solutions project involved five organisations but in their second project four organisations were found to be involved in the process. In the light of the reviewed literature on servitization and IOR, the next section proposes the research objective and questions which underpin this research.

2.4 Research Objective and Questions

Extant studies show that a narrow approach to relationships, focusing only on dyadic settings during the implementation of large scale strategic changes could be problematic (Bastl et al., 2012; Choi and Wu, 2009a; Ehret, 2004). It is claimed that such an approach:

> […] lead to a dead end if the context of the value network is not taken into account. In addition, as companies are unbundling and re-bundling

> activities in search of a competitive advantage in the network context, companies may be bought, sold, or cease to exist. Such dynamics may pose severe problems for a company exclusively devoted to a dyadic approach to customer relationships. Profitable customers simply disappear, established buying centres are redefined, and new relational norms are established (Ehret, 2004, p. 468).

In one of the few studies which address the issue of network level relationships in the development of servitized offerings, Windahl and Lakemond (2006) also utilized a network approach in their research. They identified two projects in the same company where the offering is an integrated product-service mix. In so doing, they followed the implementation process – interviewing individuals belonging to external organisations or internal departments who were involved in the process. They argue that "instead of focusing on the firm itself or even the industry, it becomes important to focus on the value-creating system where different actors (suppliers, business partners, allies, customers) work together to co-produce value; roles and relationships need to be reconfigured in order to create value in new forms, and a dynamic fit between competencies and customers becomes crucial" (Windahl and Lakemond, 2006, p. 809). Therefore rather than concentrating on a predetermined 'dyadic' or 'triadic' setting, I attempt to capture the significant relationships which unfold over time during the servitization process. This is also in line with the way servitization is conceptualised in this research as longitudinal relational processes during which a provider integrates goods, services and knowledge components into unique combinations that are aimed at meeting customers' evolving business needs[4].

To sum up, the reviewed literature on servitization shows that although numerous studies have examined the transition of manufacturing firms into product-service providers (e.g. Davies et al., 2006; Oliva and Kallenberg, 2003),

[4] This is also in line with pragmatism as a philosophical stance which eliminates *a priori* speculation about the nature of reality (Hookway, 2000). Instead, for pragmatists, research questions or objectives are at the centre of the inquiry and the research settings are identified in the light of the research question. The philosophical underpinning of this research is discussed in Chapter 3.2 under pragmatism.

little research has been undertaken to find out their implications on the network. This is despite the recurring theme that servitized offerings are predominantly provided by a network of companies (Bastl et al., 2012; Davies et al., 2006; Tuli et al., 2007; Windahl and Lakemond, 2006). Thus, there exists a knowledge gap both in academia and practice related to the study of change towards servitization within the network. Although the extant literature on servitization frequently emphasizes the importance of inter-organisational relationships, little is known about what really constitutes these relationships in a servitization context. Given the scarce research on this matter, I argue that inter-organisational relationships in servitization can even be considered as 'black boxes'. Considering that different offerings have different relationship attributes (Bastl et al., 2012; Johnson and Mena, 2008), there is an emerging need to explore the relationship attributes as well as their respective network structures in order to better understand the provision of servitized offerings within a network perspective. In the light of these points, the aim of this research is to explore the implications of servitization on network relationships and structures. In so doing, I utilize the traditional product-based offerings as a reference point to demonstrate the differences (or similarities) incurred by relationships due to servitization. Thus, the research objective for this research is stated as:

To explore how different product and servitized offerings impact on the inter-organisational structure and relationships of a manufacturing network.

Accordingly, I propose the following research questions in order to address the research objective to explore the impact of servitization on IORs. The first research question is necessary to understand the nature of exchange in a servitizing network. In other words, there is a need to first understand the types of offerings provided by the network to the customer base. Simultaneously, within the identified offerings, it is particularly important to understand the customer perspective which is central to servitization. In fact, as discussed in Chapter 2.2.1.4, understanding the customer perspective is fundamental for the provision of servitized offerings (Kowalkowski, 2011; Macdonald et al., 2011; Tuli et al., 2007; Vargo and Lusch, 2004). Thus, manufacturers need to first

understand customers' requirements and related contextual drivers for the acquired offerings. In the light of these, the first research question aims to identify and explicate the product and servitized offerings provided by the network. As a result, I propose the following research question:

> *RQ 1: What are the different types of products and servitized offerings provided by a manufacturer and what customer imperatives do they need?*

Inter-organisational relationships by definition occur amongst at least two organisations. Within this aspect, IORs have been studied in three main research settings which are dyadic (i.e. a network composed of two organisations), triadic (i.e. a network composed of three organisations) and supply network structures (i.e. a network composed of more than three organisations) which were identified in Chapter 2.3.3. In line with this, every offering is delivered through a set of relationships which are structured in a particular manner. Accordingly, the extant literature shows that product-based offerings are delivered through a dyadic structure (Hallen et al., 1991) whereas servitized offerings are argued to be delivered in a triadic structure (Bastl et al., 2012; Holma, 2009). Nevertheless, only a few research studies have addressed this topic and further research is needed to uncover some of the complexities surrounding the structure of servitized networks. For instance considering that there are different types of servitized offerings such as product, use and result oriented offerings (cf. Tukker, 2004), the extent to which the network structures differ amongst these servitized offerings are not known. Hence, in order to illustrate the differences and similarities across the network structures for different offerings, there is an emerging need to explore the network structure aspect. To this end, I propose the following research question:

> *RQ 2: What are the inter-organisational network structures required to deliver the different types of product and servitized offerings?*

It is repeatedly suggested in the servitization literature that an effective way of facilitating the provision of servitized offerings in a network is through the management of inter-organisational relationships (Bastl et al., 2012; Johnson and Mena, 2008; Lockett et al., 2011). In addition, it is also pointed out that different offerings have differing relationship attributes (Bastl et al., 2012; Johnson and Mena, 2008). Despite the frequent emphasis on the importance of inter-organisational relationships, little is known about what really constitutes these relationships in a servitization context. In particular, there is an emerging need to identify the attributes that underpin these relationships. By this way, managers can be made aware of the attributes that support the delivery of different product and servitized offerings. This is seen as essential since there is an emerging gap both in academia and practice in terms of a proactive approach to relationship management (Bastl et al., 2012; Windahl and Lakemond, 2006). In the light of these points, I propose the following research question pertaining to the key relationship attributes within product and servitized offerings:

> *RQ 3: What relationship attributes support the delivery of the different types of product and servitized offerings?*

The previous research questions deal with the nature of offerings, the structure of the network and the key relationship attributes in the network, respectively. However, these three areas of inquiry are not disconnected but in stark contrast they are intertwined and closely related to collectively address the aim of the research. Based on the conclusions drawn from the literature, there are overarching linkages across these three research questions. For instance, it is argued that dyadic network structures are observed for product-based offerings with a short-term transactional relationship (Oliver, 1990). In particular, the key attributes of these transactional relationships are argued to be based on the product and the price (Holma, 2009). On the other hand, a triadic network structure was evident for servitized offerings in Bastl et al. (2012). In addition, the relationships were collaborative in nature and based on long-term interactions within servitized offerings (Johnson and Mena, 2008; Penttinen and

Palmer, 2007). Nevertheless, there is only a handful of research to substantiate these claims. In particular, further research is needed to explore and understand the differences amongst the servitized offering types. In the light of these, I propose the following research question pertaining to the linkages across the areas of inquiry to understand the implications of offerings on the structure and relationships of the network:

> *RQ 4: What are the linkages between the offerings, inter-organisational network structure and relationship attributes?*

In line with the understanding that the offerings, structure and attributes in the network are inter-linked, next I propose a conceptual framework which illustrates these linkages.

2.5 A conceptual framework for IORs in servitization

In the light of the research objective and questions, the conceptual framework of the study is proposed in Figure 5. The blue coloured brackets in the figure show the respective areas for each research question. The arrows on the framework do not imply causality but refer to the link between the offering, structure and relationship attributes. In the broadest terms, the framework is built on the theoretical and empirical findings of the extant literature in the light of the research questions. Additionally, the respective areas for each research question are indicated in the framework. For instance, Research Question 1 refers to the area indicated by the Offering. Similarly, Research Question 2 refers to the Inter-organisational Network Structure and Research Question 3 refers to the Relationship Attributes areas. On the other hand, Research Question 4 is aimed at understanding the relationships across the offering, structures and relationships, thus this encompasses the entire framework as indicated by the bracket at the right hand side of the figure. In addition, Table 9 gives a detailed breakdown of the identified attributes for servitized relationships with reference to product offerings.

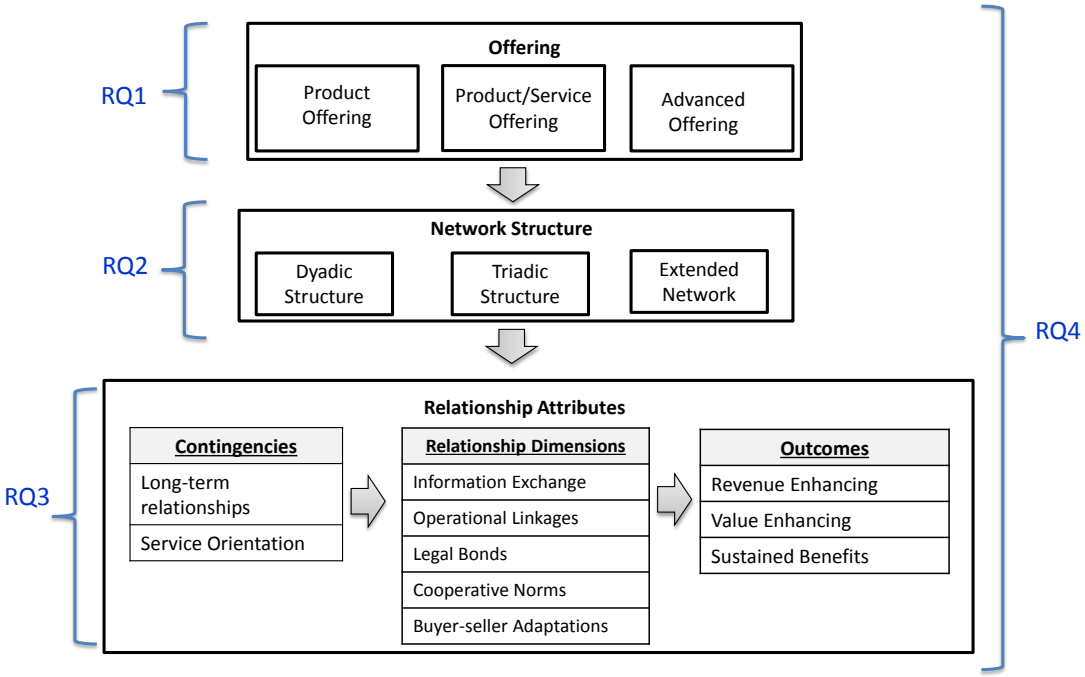


Figure 5. The conceptual framework

For the Offering area in the framework (i.e. RQ1), three types of offering are identified. The product offering refers to the traditional product-based value proposition. This offering provides the point of reference to demonstrate the impact of servitization on the network in the form of differences or similarities. The product/service offering refers to the basic servitized offerings which include a product component as well as a basic service component that is offered as a package. This coincides with Tukker's (2004) definition of product-oriented services. Finally, the last offering is called advanced offering. This type of offering refers to function-based or use-based value propositions which are delivered on the basis of availability or capability. In the broadest terms, the advanced offerings coincide with use-oriented and result-oriented services as defined in Tukker's (2004) classification. Such offerings are referred to as 'advanced' in this research. It is important to point out that the second part of Research Question 1 which addresses the issue of customer imperatives

pertaining to each of the offerings is not illustrated in the conceptual framework since it is considered to be a part of the offering. Therefore, these imperatives are discussed as part of the offering later in Chapter 4 Findings.

For the Inter-Organisational Network Structure area (i.e. RQ2), three main structures are detailed as identified by the extant literature (See Chapter 2.3.3). These are dyadic, triadic and extended network structures. The first refers to a network with two actors, the second to a network with three actors and the third to a network with more than three actors.

For the Relationship Attributes (i.e. RQ3), in line with the reviewed literature, it shows that the contingent factors of servitization impact on various dimensions of relationships. Firstly, the extant literature argues the long-term orientation together with the inclusion of service orientation impacts on the six relationship dimensions in the following manner (cf. Bastl et al., 2012; Lockett et al., 2011).

With reference to product-based traditional offerings, servitized offerings require (see Table 9*):*

- an open, frequent, and higher quality information exchange through increased numbers and levels of communication channels
- closely coupled operational linkages with formalized routines and procedures
- relational mechanisms which act as a substitute for or complement to contractual mechanisms
- the establishment of cooperative norms and partnering practices
- higher levels of adaptations by both buyers and sellers

Secondly, building on the reviewed extant literature (see Table 9), the framework shows that the changes in relationships impact the performance in three major ways:

With reference to product-based offerings, servitized offerings:

- provide revenue stability with higher profit margins *(revenue enhancing benefits)*
- provide a greater understanding of customer needs and requirements *(value enhancing benefits)*
- facilitate innovation and locks in the customers *(sustained benefits)*

It is important to note that the arrows inside the relationship attributes area in Figure 5 do not imply causality but only refer to the impact of *contingencies on relationships* and *relationships on performance*.

Finally, for Research Question 4 (RQ4), there is a need to first understand the three areas of inquiry which will then lead to the explication of the linkages between them. That is why RQ4 encompasses the entire framework with the aim of addressing the research objective of this thesis.

Table 9. The attributes of servitized offerings derived from literature

	Product-based Offerings	Servitized Offerings	Identified Attributes in the Extant Literature
	Context		

Contingent Contextual Factors	• Short-term Relationships
	• Transactional based interaction
		• Longer-term relationships (Baines et al., 2007; Penttinen and Palmer, 2007)
		  ○ The increased complexity of the network in terms of actors involved due to introduction of service component (Johnson and Mena, 2008; Bastl et al., 2012)
		  ○ High levels of structural interdependence and embeddedness amongst network members (Monczka et al., 1998; Uzzi 1997)
		• Increased level of uncertainty entailed, due to managing products and services at the same time. (Baines et al., 2007; Johnson and Mena, 2008).
		  ○ The increased levels of risk for the manufacturer generated from the asset-ownership and promised availability (Davies et al., 2006).
		  ○ The customer focus orientation (Galbraith 2002; Tuli et al., 2007)
			1- Longer-term relationships
			2- Service orientation

	Relationship Dimensions		
Information Exchange	• Transactional information exchange based on product and price features	• Open information exchange • Multi-directional information exchange • Increased frequency and communication channels • Exchange of rich quality information	1- Information Exchange 2- Operational Linkages 3- Legal Bonds 4- Cooperative Norms 5- Buyer-seller Adaptations
Operational Linkages	• Low operational linkages	• Highly formalized relationships • Closely coupled linkages	
Legal Bonds	• Warranty related product features guarantee	• Relational mechanisms act as substitute or as complement to contractual mechanisms • Risk and benefit sharing practices	

Cooperative Norms	• Low cooperative norms • Dependent on product satisfaction	• Formalized cooperative norms • Establishment of firm-level partnering competences • Greater reliance upon relational mechanisms	
Adaptations by sellers	• Adjustment of product specifications	• Higher levels of relationship adaptations • Reciprocity in adaptations	
Adaptations by buyers	• Product customization towards customer segments	• Higher levels of relationship adaptations • Reciprocity in adaptations	
	The Expected Outcomes		
Revenue enhancing	• Product Quality	• Higher profit margins (Wise and Baumgartner, 1999), • Revenue stability (Oliva and Kallenberg, 2003) • Additional sources of revenue (Cohen et al., 2006)	1- Revenue Enhancing 2- Value Enhancing 3- Sustained Benefits
Value Enhancing	• Reputation • Brand recognition	• Providing a greater understanding of customer needs (Pentinnen and Palmer, 2007; Vandermerwe, 2000). • Gaining insight into customer needs (Wise and Baumgartner, 1999)	
Sustained Benefits		• Facilitating product-centred innovation (Vandermerwe and Rada, 1988) • Locking in customers (Cohen and Whang, 1997; Vandermerwe, 2000),	

2.6 Summary of the Literature Review Chapter

The key points emerging from the Literature Review Chapter are summarized in Table 10:

Table 10. The summary of the Literature Review Chapter

Servitization
Definition - *Servitization* is viewed as longitudinal relational processes, during which a provider integrates goods, services and knowledge components into unique combinations that are aimed at meeting customers' evolving business needs. *Expected Outcomes* - Revenue Enhancing, Value Enhancing, Sustained Benefits *Contingencies* - Long-term relationships - Service orientation
Inter-Organisational Relationships
Definition - *An IOR is an identity outside organisational boundaries which is a collection of direct or indirect interactions amongst the organisations involved.* *Adopted Framework* - *Cannon and Perreault's (1999) relationship connectors framework*
Conceptual Framework
Illustrated in Figure 5
Research Objective
To explore how different product and servitized offerings impact on the inter-organisational structure and relationships of a manufacturing network.
Research Questions
RQ 1: What are the different types of products and servitized offerings provided by a manufacturer and what customer imperatives do they need? *RQ 2: What are the inter-organisational network structures required to deliver the different types of product and servitized offerings?* *RQ 3: What relationship attributes support the delivery of the different types of product and servitized offerings?* *RQ 4: What are the linkages between the offerings, inter-organisational network structure and relationship attributes?*

3 RESEARCH METHODOLOGY

Rather than denying the opaqueness and unruliness of the world around us, and rather than conjuring official protocols that offer the false promise of taming that world, pragmatists accept that inevitability of the world as it seems to be, and then offer guidance concerning how to work within the confines of the world as it appears to us—as it seems to be. Pragmatism is a philosophy that seeks to help us master our world.

(Bromley, 2008, p. 12)

3.1 The overview of the Chapter

The purpose of this chapter is to outline the methodology adopted in this research. This chapter begins by explaining the pragmatist philosophical stance adopted by the researcher. Next, the case study method is discussed and its rationale explained. This is by explication of the case selection criteria, together with the sampling method. The research approach section outlines the abductive process used for the data collection and analysis. The final section serves as an assessment of the rigour and trustworthiness of the study. Figure 6 illustrates the overview of the sections in this chapter.

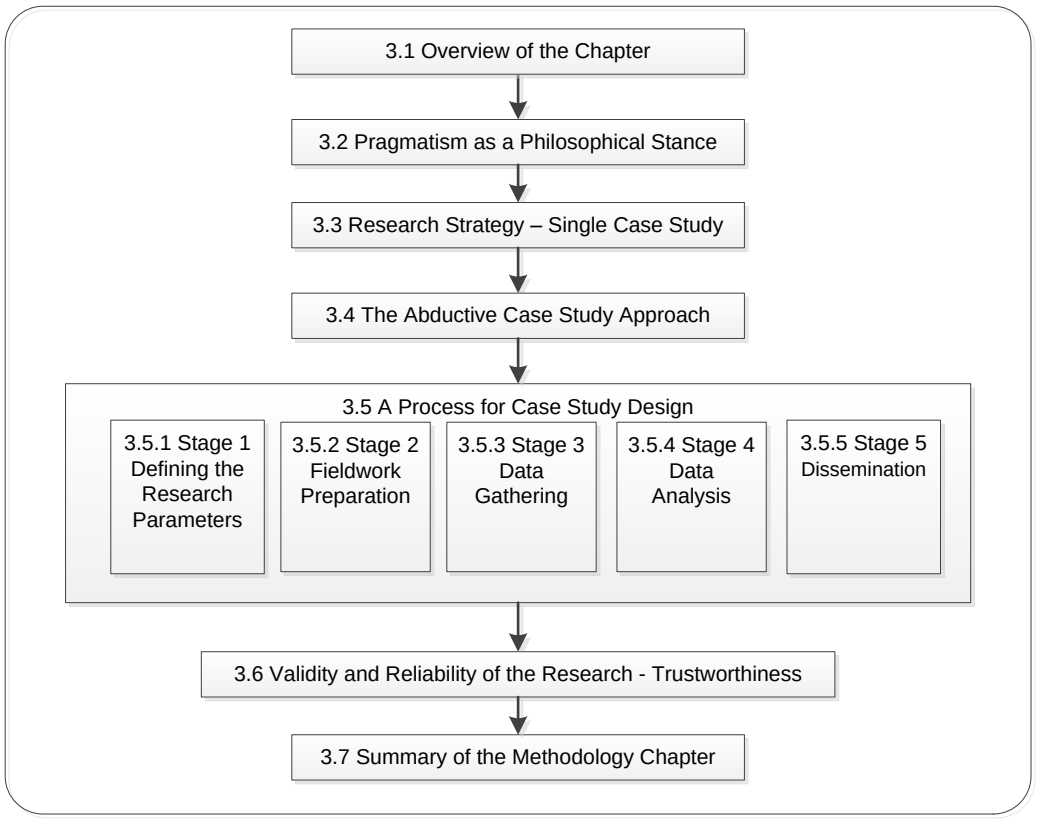


Figure 6. The structure of the Methodology Chapter

3.2 Pragmatism as a Philosophical Stance

At the centre of every piece of research lie the philosophical assumptions and beliefs of the researchers involved. I concur with Philips (1987) and believe that reality exists, independent of being perceived by us and also irrespective of our theories. However, I also believe that we can discover some aspects of the nature of reality if it is investigated for long enough and thoroughly enough (cf. Houser and Kloesel, 1992). At the same time, I respect the validity of multiple perspectives on reality.

Each piece of research begins with the research objective and it is this objective that drives the research process. In accordance with my philosophical beliefs and understanding, I embrace a pragmatist research philosophy. This section is focused on explaining the underlying logic of pragmatism.

Pragmatism as a philosophical paradigm originated during late 19th century with Charles Sanders Peirce (1839-1914). Further contributions from William James (1842-1910) and John Dewey (1859-1952) laid the foundations of this field and these three scholars are generally considered as the founding fathers of this perspective. The concept of pragmatism predominantly gained popularity in the late 20th century (Morgan, 2007). In essence, pragmatism calls for closer links between theory and practice and it contends that a meaningful philosophy must be practical (Campbell, 1995). According to Guinlock (2000), John Dewey conceptualise pragmatism in the following way:

> Philosophic inquiry […] ought to take its point of departure from the aspirations and problems of the various sorts of human activity, and an effective philosophy would develop ideas responsive to those conditions. Any system of ideas that has the effect of making common experience less intelligible than we find it to be is on that account of failure. […] Moral philosophy should not address the consternations of philosophers as such, but the characteristic urgencies and aspirations of common life; and it should attempt to identify the resources and limitations of human nature and the environment in which it interacts. […] The subject matter of philosophy is not philosophy […] but problems of men. (Gouinlock, 2000, p. 207).

Dewey further contends that historically the way philosophers had used and developed theories caused the main subject matter of the research to become less clear and more ambiguous (Gouinlock, 2000). Accordingly, pragmatists also challenged the way the scholars adopted or actually inherited the embedded assumptions of philosophical paradigms without really understanding the conditions and/or circumstances which created those assumptions in the first place. Pragmatism as a philosophical stance eliminates *a priori* speculation about the nature of reality (Hookway, 2000). Instead, for pragmatists, research questions or objectives are at the centre of the inquiry. In fact for Dewey, the ultimate goal of an inquiry is to reach the state of 'knowing' instead of 'knowledge' (Boyles, 2006). The reason for this claim is that the word

‘knowledge’ carries the assumption that the line of inquiry came to an end and the truth developed through the inquiry is certain. It is further argued that inquiry is not a static concept but rather it has a dynamic and evolving nature and thus researchers need to acknowledge that the results of any research are always subject to further justification and inquiry (Dewey, 1938). That is why Dewey contends that researchers need to focus on warranted assertions “[…] such that ‘warrant’ is a property of assertions made about the problem when it is solved (where ‘solved’ is understood as a temporal phase which is also a portal to further inquiry)” (Boyles, 2006, p. 61). In so doing, pragmatism is unique in its construction of reality where the produced knowledge (i.e. warranted assertions) is always considered together with its process of inquiry. Therefore, the conditions, assumptions, context and contextual limitations are always a part of warranted assertions. Bromley (2008) points out that in order to produce warranted assertions researchers need to carry out a transparent and thorough inquiry process which will enable other researchers to appropriately judge the research findings.

Pragmatists challenge the philosophical dichotomy which categorizes ontological stances in a continuum with positivism at one end and constructivism at the other. Lincoln and Guba (1985) used ontology, epistemology and methodology as reference points to analyse these so-called ‘opposing’ views. In turn, this had a reflection on dichotomies of inductive vs. deductive inquiry and a similar dichotomy of qualitative vs. quantitative methodologies. However, pragmatism is a stance rejecting these *a priori* dichotomies which argues that an inquiry of knowledge is driven by the research question rather than the ontological assumptions of any certain group of individuals. In pragmatism, these assumptions have even been termed *a priori* speculations about the nature of reality (Brent, 1993). With such an approach, pragmatism “[…] generates a nondogmatic attitude to moral precepts and principles” (Tiles, 2000, p. 705). Morgan (2007) provides a list of anomalies which challenges philosophical camps situated along these one-dimensional continuums. He calls the ontological, epistemological and methodological

assumptions as *metaphysical paradigms* as a whole and explicitly points to three anomalies (Morgan 2007, p. 64):

> 1. Despite the metaphysical paradigm's emphasis on ontology, epistemology and methodology as the defining characteristics of paradigms in social science research, the actual process of creating these paradigms and drawing boundaries is based on events that occur well outside the philosophy of knowledge.
> 2. Despite the metaphysical paradigm's insistence that different paradigms create incommensurable kinds of knowledge, the attempt to use this strong version of incommensurability repeatedly fails at every level except for debates about the nature of reality and truth.
> 3. Despite the metaphysical paradigm's claim that methodological problems in the social sciences could be addressed through an ontology-driven version of the philosophy of knowledge, this belief system remains disconnected from practical decisions about the actual conduct of research.

In line with these, it is further argued that a pragmatist approach to research is an alternative to the dualism of qualitative vs. quantitative approaches (see Table 11). Qualitative research is mainly attributed to inductive inquiry, coupled with subjective researcher participation and an emphasis on the context of the research. The quantitative approach, on the other hand, is generally related to deductive inquiry, with researchers focusing on rigour and objectivity linked to the general aim of achieving generalizability. However, every scholar who has conducted any form of field research could easily justify that none of the qualitative and quantitative approaches are so clearly distinct or separated. Thus, a pragmatist approach offers an alternative way to this existing dichotomy by abduction, intersubjectivity and transferability. Table 11 illustrates the contrasts amongst inductive (i.e. qualitative), deductive (i.e. quantitative) and abductive (i.e. pragmatist) approaches.

A pragmatist research approach is based on ‘abductive reasoning’ (Morgan, 2007). This essentially refers to the movement between induction and deduction throughout the research process. In so doing, this approach does not treat practice and theory in isolation during the actual investigation of the phenomena but rather treats them simultaneously in an iterative manner. The same applies to the issue of researcher participation. Building on positivism, quantitative research argues for the need to distance the researcher from the topic in order not to contaminate the research context (Miles and Huberman, 1994).

Table 11. The features of qualitative, quantitative and pragmatist approaches

	Qualitative Approach	**Quantitative Approach**	**Pragmatist Approach**
Connection of theory and data	Induction	Deduction	Abduction
Relationship to research process	Subjectivity	Objectivity	Intersubjectivity
Inference from data	Context	Generality	Transferability

Morgan (2007, p. 71)

This is understandable for biological or chemical sciences. However, social researchers of a qualitative background have long advocated that no researcher can be completely objective (Eisenhardt, 1989). The same could also be argued for complete subjectivity (Morgan, 2007). Thus, pragmatism suggests intersubjectivity, where the researcher decides when and where to be involved or to interact during the course of the research. In so doing, the researcher needs to understand and explain the context of the study as well as acknowledge the concerns of the scholars who review or examine the research. In addition, qualitative results are generally deemed to be context specific, whereas quantitative results are argued to be significant for larger populations. Within this aspect, the quantitative research is more aligned with statistical generalizability. Again a pragmatist approach provides a means of achieving

transferability to other contexts through analytical generalizability[5] (cf. Buchanan, 1999; Butler, 1997; Dyer and Wilkins, 1991; Mitchell, 1983; Yin, 2003). Yin (2002, pp. 31-33) describes these as "analytic generalization" and "statistical generalization," respectively. Analytic generalization is not generalization to some defined population that has been sampled, but to a theory of the phenomenon being studied, a theory that may have much wider applicability than the particular case studied.

In conclusion, a pragmatist philosophy enables researchers to move beyond the dichotomy of qualitative versus quantitative studies, or the related debates on positivism versus constructivism (Morgan, 2007). In fact, it is argued that "pragmatism allows researchers to put this debate to the side and in the process, develop research that is focused on serving human purposes […] both morally rich and useful to organisations and the communities in which they operate" (Wicks and Freeman, 1998, p. 123). Thus, it is important to point out that pragmatism values the role of social, ethical, historical and political contexts for the research phenomena (Wicks and Freeman, 1998). Pragmatism also accepts multiple perspectives on the way in which knowledge is created (Cherryholmes, 1992). Importantly, pragmatism guides researchers to provide 'warranted assertions' as opposed to providing 'objective truths' (Johnson and Onwuegbuzie, 2004). In other words, researchers should reveal how actors or variables tend to react under certain conditions by acknowledging the limitations of such assertions. Pragmatism can provide an alternative way, away from the duality of positivism versus constructivism:

> Rather than seeking to impose order and clarity and authoritative ways of finding truth in a world that was disorderly, opaque, and devoid of incorrigible truth, pragmatists pursued a different strategy. In essence, given the unruly and vague world in which we must live and thrive, pragmatism asked how can our language, our concepts, and our ways of

[5] In qualitative research, generalizability is concerned with how findings generalize to theory rather than to populations (Bryman, 2012). This type of generalizability is referred to as analytical generalizability (Buchanan, 1999; Yin, 2003) or theoretical generalizability (Mitchell, 1983).

> knowing be crafted in ways that will be plausibly instrumental such that we stand a better chance of figuring out what it would be reasonable to believe about that world? If we can but accomplish that, we might then be in a better position to figure out what it might (just might) be useful to do. Useful does not mean the most expeditious. Useful means instrumental (Bromley 2008, p. 12).

In the light of the philosophical considerations discussed above, the next section details the research method adopted in this research.

3.3 Research Strategy – Single Case Study

This research investigates the impact of servitization on network structure and relationships. The reviewed literature showed that the implementation process of servitization and its implications for the network is an understudied and nascent topic. The concept of 'Methodological Fit' (Edmondson and McManus, 2007), suggests that in studies where the body of literature is nascent or immature, researchers do not know what issues may emerge from the data and so avoid hypothesizing specific relationships between variables. Since little is known, rich, detailed and evocative data is needed to shed light on the phenomenon (Langley, 2007). Nevertheless it is important to note that the literature review has shown there are an emerging number of studies that investigate servitization and its impact on IORs. Although these studies provide a foundation or starting point for this research through the development of a conceptual model, the literature is not in a state of theoretical maturity.

As part of the philosophical stance of pragmatism, research questions are perceived to be at the centre of the inquiry. Hence, in line with pragmatism, I believe that a case study methodology is appropriate for my research, given the nature of the research questions. The research questions of this study are exploratory in nature and thus demand a methodology appropriate to bring about rich and detailed data (Yin, 2009). Given the nascent state of the related literature, the case study method is more suited to the exploratory research questions (Edmondson and McManus, 2007). A further consideration for case

study research design is the decision about whether to conduct a single or multiple case studies.

Yin (2002) points to a number of rationales for the appropriate use of a single case study design, as opposed to multiple case study design. An example is the critical cases which are used when the researcher is testing theoretically developed propositions or hypotheses in a single case. This is especially useful for new theoretical insights when there is a need to empirically validate the research hypothesis. Another rationale for a single case study proposed by Yin (2002) is the extreme or unique case where a phenomenon is investigated in an extraordinary situation. Another possible rationale is a representative or typical case (Yin, 2002). “Here the objective is to capture the circumstances and conditions of an everyday or commonplace situation. […] The lessons learned from these cases are assumed to be informative about the experiences of the average person or institution” (Yin, 2002, p. 41). Further rationales include revelatory and longitudinal cases. In the event of the former, a previously inaccessible case becomes available to researchers for the first time for investigation and for the latter researchers are interested in the way in which a certain phenomenon evolves over time (Yin, 2002). The objective of this research, however, is to explore how different product and servitized offerings impact on inter-organisational structures and relationships. In essence, this research addresses the knowledge gap at the intersection of the servitization and IOR literature. With this in mind, the research is not an attempt to capture a unique, critical or extreme case of servitization. However, the research aims to capture the circumstances and conditions of a servitizing manufacturer’s network that represents a typical or average institution. In addition, there is no known study to date that reveals how a supply network is configured for different product and servitized offerings. Thus, this research is in line with Yin’s (2002) rationale for a single case study approach, especially in terms of being a representative or typical case and, to some extent, a revelatory case. Due to the paucity of empirical research within this topic, the single case study could provide the foundations for future studies using multiple cases.

Meredith (1998) also argues for the adoption of a single case study methodology for exploratory research as it is appropriate in terms of generating the depth of the research. In addition, Voss et al. (2002) also advocate the use of the case study methodology for exploratory research purposes as it enables the explanation of actual practices in their real life environment by developing an understanding of the phenomena in its context. Thus a conscious decision was made to focus on a single case study in order to provide a depth of understanding. The choice of single versus multiple case studies is best described by Easton (1995, p. 382) who argues "researching greater numbers of cases, with the same resources means more breadth, but less depth". In support of these perspectives, the research design for this doctoral thesis was based on an in-depth abductive, qualitative case study. The aim was to obtain rich and detailed data for the phenomena under scrutiny –network structure and relationships in a servitization context. In particular, the single case study approach provides the foundations for generating depth of research (Meredith, 1998) with 'thick' descriptions (Geertz, 1973) of the way in which supply network structures and relationships are configured for product versus servitized offerings. The aim is to make the description 'thick' enough for future researchers to draw parallels with their own context of inquiry. It was this requirement for a detailed description which partly shaped the need for 43 interviews aimed at understanding the network actors and their relationships. The other driver for 43 interviews was the need to reach theoretical saturation (Strauss and Corbin, 1998).

3.4 The Abductive Case Study Approach

In general terms, case studies are usually conducted in an inductive or deductive manner (Yin, 2002). "Inductive reasoning commences with the observation of specific instances, and seeks to establish generalisations; [whereas] deductive reasoning commences with generalisations, and seeks to see if these generalisations apply to specific instances" (Hyde, 2000, p. 82). For inductive case studies, researchers are instructed to distance themselves from the theory during data collection and accordingly they are informed to follow the

data wherever they lead them (Silverman, 2005). As argued by Miles and Huberman (1994), every researcher is affected by his/her theoretical or philosophical beliefs which then serve as a certain bias towards the desired data collection and analysis. In fact, this is the main criticism of grounded theory studies which fail to acknowledge the limitations of staying truly 'theory free' (Bryman, 2012). On the other hand case studies with a deductive approach usually entail a strict focus on the theoretical framework with the aim of providing evidence either supporting or contradicting research hypotheses (Flyvbjerg, 2006). Such an approach then risks the discovery of any new findings that are emergent, unanticipated or unforeseen (Yin, 2002). At the same time it is difficult to believe that none of the emergent data affects the actual development of the hypothesis. In fact, it has been argued that "both quantitative and qualitative researchers demonstrate deductive and inductive processes in their research, but fail to recognise these processes" (Hyde, 2000, p. 82). In a debate engulfed by the linear dichotomy of induction versus deduction, pragmatism offers an alternative way which is centred on the notion of abductive reasoning. In line with pragmatism (cf. Peirce, 1903), there is the abductive case study approach (cf. Dubois and Gadde, 2002). The abductive case study approach is adopted in this study and is the focus of this section.

The abductive case study approach dictates a continuous iteration between theory and emerging data to be made throughout the data collection and analysis process (Lewis, 1998; Järvensivu and Törnroos, 2010). Dubois and Gadde (2002, p. 559) state that this approach creates "*fruitful cross-fertilization where new combinations are developed through a mixture of established theoretical models and new concepts derived from the confrontation with reality"*. In essence, it advocates the notion that various activities within the research process are intertwined thus occurring concurrently. It is further argued that "the combined efforts of the successive steps in the learning process are seldom explicitly presented to the reader […] Learning in the research society as a whole would be improved if more of the processes of how we [researchers] have learned were revealed to the reader" (Dubois and Gadde, 2002, p. 560). The underlying mechanism within which these processes

interact is described as systematic combining. It is defined “as a nonlinear, path-dependent process of combining efforts with the ultimate objective of matching theory and reality” (Dubois and Gadde, 2002, p. 556). In an effort to illustrate this notion, Dubois and Gadde (2002) use four concepts, with theory and framework on the one side and the empirical world and the case on the other. They argue that what underpins a research agenda is the confrontation of theory with the empirical world. Within the abductive approach, this confrontation is achieved through ‘evolving framework and evolving case study’ (Dubois and Gadde, 2002). Thus the role of the framework is of central importance for matching theory with practice. As part of the abductive approach, both the theoretical framework and the research objectives are refined to accommodate the confrontation with the empirical case (Kovács and Spens, 2005). “Knowledge of existing literatures therefore shapes the initial research design; but emergent empirical findings cause fresh theoretical perspectives to be mobilized” (Green et al., 2010, p. 117). This is also in line with the later conceptualisations of grounded theory by Strauss and Corbin (1990) in which they acknowledge the merit of having a general understanding of the related literature for the data collection process. In an abductive approach, “the researcher would not be even able to identify ‘all the literature’ since the empirical fieldwork parallels the theoretical conceptualization hence, the ‘need’ for theory is created in the process” (Dubois and Gadde, 2002, p. 559). Thus despite the importance of the theory, it is created in the due process of the research. To this end, the abductive approach is closer to inductive reasoning as opposed to deductive reasoning (Dubois and Gadde, 2002).

The abductive approach was deemed appropriate for the study since I empirically investigate a relatively new concept. First and foremost, I believe that this approach is a better representation of the actual implementation of the case study as opposed to pure induction or deduction. In other words, the abductive approach serves as an alternative to standardized conceptualisations which do not reflect the actual nature of the way in which research is carried out (Dubois and Gadde, 2002). These extant approaches treat the research process as a linear, uni-directional action carried out step by step from the data

collection to the data analysis. On the other hand, it is argued that, as part of the abductive approach, by iterating back and forth between literature review, case evidence and intuition, researchers are better able to understand and develop theories that match reality (Green et al., 2010; Lewis, 1998). In the light of these, the following sections describe the process taken to conduct the case study research.

3.5 A Process for Case Study Design

As with any type of research inquiry, a plan or research design is needed to conduct the case study (Yin, 2002). In general, case studies are viewed to have a less structured design process as opposed to surveys or experiments which are systematically designed and operationalized (Miles and Huberman, 1994). In an effort to provide a systematic approach to the case study design, some scholars advocated a five stage process which should be followed by the researchers (Stuart et al., 2002; Yin, 1994). These processes are shown in Figure 7 which is adopted from Godsell (2008, p. 69). For instance, Stuart et al. (2002) proposed five stages which are based on defining research questions, instrument development, data gathering, data analysis and dissemination. Yin (1994) on the other hand, provided a process similar to Stuart et al. (2012) but an additional depth of detail was elaborated in his work.

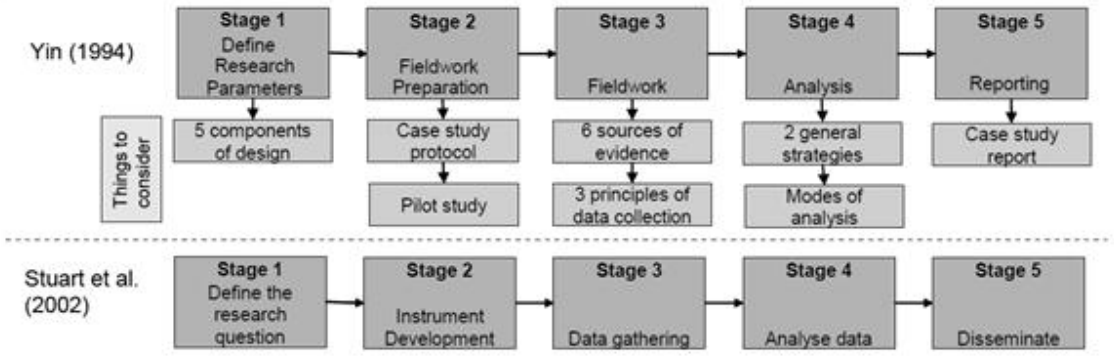


Figure 7. The five stage process for case study design

It can be seen that the case study design processes (e.g. Stuart et al., 2002; Yin, 1994) are to a great extent similar in terms of the stages and their order. In

general terms, the first stage involves the definition of the research questions/objectives. The second stage is the preparation for fieldwork through the development of the data collection instrument. The third stage is simply related to the data collection. The fourth stage is the data analysis and the fifth stage is about planning on how to report the findings.

From a pragmatist point of view, the shortcoming of these five stage processes is their linear structure. They treat the research process as a uni-directional task carried out step by step. To this end, I concur with Dubois and Gadde (2002) that the research process should involve a continuous review and refinement of the theory with the emergence of data. This movement between theory and data is the underlying logic of the abductive research approach (Lewis, 1998; Järvensivu and Törnroos, 2010). To this end, a systematic approach for abductive case study design is not established in the literature (Kovács and Spens, 2005). In fact, there are only a few studies investigating the research design for abductive studies since this area is an emerging field (Spens and Kovács, 2006). Within this domain, Kovács and Spens (2005) juxtaposed the areas of consensus to develop an abductive research process. Figure 8 illustrates the abductive research process (Kovács and Spens, 2005, p. 139). Accordingly, the abductive research process starts at the point in which an observation in the empirical world does not match with the prior knowledge (Dubois and Gadde, 2002; Kovács and Spens, 2005). This stage is referred to as deviating real-life observations. This is followed by the second stage which is called theory matching. This is the stage where the iteration between the emerging theory and extant knowledge occurs. It is argued that the purpose of this process is to understand the empirical enquiry to suggest a new theory in the form of propositions or suggestions (Kovács and Spens, 2005). This leads to the third stage (i.e. theory suggestion) where the conclusions of the research are presented. According to Kovács and Spens (2005) the final stage of an abductive research should include the application of the research findings to an empirical setting in a deductive manner. Nevertheless, they also point out that "[…] abductive reasoning starts with a deviating observation [i.e. stage 1] and concludes in H/P in point 3" (Kovács and Spens, 2005, p 139). The limitations of

this research process are 1) it is not specific to case study research since it is designed as a general guiding tool for all types of research and 2) it does not provide enough detail for each stage in terms of the way in which they should be designed.

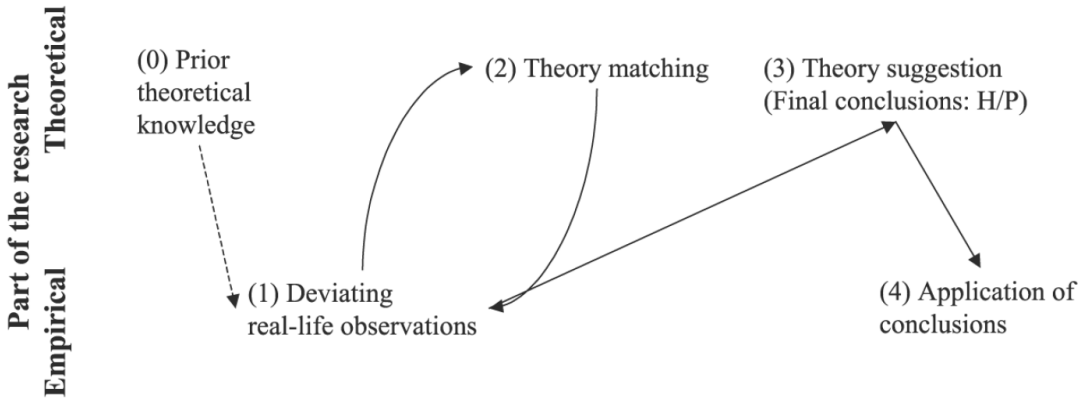


Figure 8. The abductive research process

In conclusion, it can be argued that extant studies on case study design (i.e. (Stuart et al., 2002; Yin, 1994; Yin, 2002) provides a fine detailed research approach but nevertheless their underlying logic is not in line with abductive logic. On the other hand, the studies on abductive research design is an emerging field and the research process advocated for abductive studies is not detailed enough for a full scale (Kovács and Spens, 2005) but the underlying logic is compatible with pragmatism. Thus for the purposes of this research, I adopted the case study design stages proposed in the literature (c.f. Stuart et al., 2002; Yin, 1994) by incorporating the abductive research logic (c.f. Dubois and Gadde, 2002; Kovács and Spens, 2005). Accordingly a more flexible representation is chosen in order to move away from the linear illustration of the design process. This is illustrated in Figure 9 where the prior knowledge is the starting point of the case study design as dictated by pragmatism (Kovács and Spens, 2005). This is followed by defining research questions, fieldwork preparation, data collection, and data analysis which are all parts of the theory

matching process in abductive research logic (Dubois and Gadde, 2002; Kovács and Spens, 2005). A continuous iteration was made through the research process amongst these stages (this is illustrated by the arrows directing from data analysis stage to the earlier stages). For instance, the researcher revisited the data collection instrument after conducting interviews in order to make changes such as deleting repetitive questions or incorporating new questions according to the emerging themes. The fifth and final stage for the process was the dissemination phase. This stage is mainly related about reporting the findings of the research[6]. At this point, it is now necessary to further elaborate on each of these five stages for the research design.

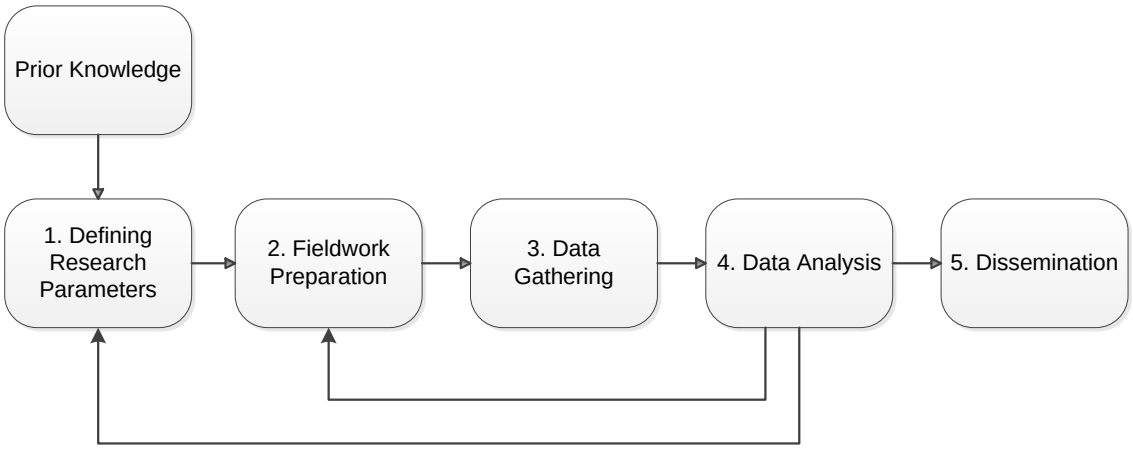


Figure 9. The research process used for the case study

3.5.1 Stage 1 - Defining the Research Parameters

The first stage of the research design was predominantly related with identifying the research parameters (Yin, 1994) or theoretical foundations (Flynn et al., 1990). Simply put, it was a stage where the focus of the research should be explicitly defined. Yin (1994) details three relevant components for this stage;

[6] It is also important to mention that the last stage of the abductive research process which relates to the application of the findings (Kovács and Spens, 2005) was not included in this doctoral study. As part of this thesis, it was not possible to conduct a deductive network study due to time, resource and access limitations. Nevertheless, I intend to conduct a follow-up study to apply the results of this research to other empirical contexts.

research questions, hypothesis/propositions and units of analysis. These three aspects are detailed in the following paragraphs.

According to Yin (1994) the first component of research design is the identification of research questions. The research questions for this doctoral study were identified at the end of the literature review chapter in Section 2.4. Throughout the research process the questions were refined as part of the theory matching process. In terms of setting the research parameters, it can be useful to restate the research objective and questions as a reminder. The aim of this research was to explore how different product and servitized offerings impact on the inter-organisational structure and relationships of a manufacturing network. Accordingly, the four research questions are restated below:

> *RQ 1: What are the different types of products and servitized offerings provided by a manufacturer and what customer imperatives do they need?*
>
> *RQ 2: What are the inter-organisational network structures required to deliver the different types of product and servitized offerings?*
>
> *RQ 3: What relationship attributes support the delivery of the different types of product and servitized offerings?*
>
> *RQ4: What are the linkages between the offerings, inter-organisational network structure and relationship attributes?*

The second component of the first stage is related to the theoretical propositions or hypothesis of the research. Yin (1994) argued that this is more relevant for deductive research and at the same time he acknowledged that the exploratory studies do not generally hypothesise such propositions. Nevertheless, the conceptual model developed in Chapter 2.5 and illustrated in Figure 5 served as the overall framework for this research. The links between the research questions and the conceptual framework were clearly demonstrated in Figure 5. The underlying logic and assumptions of the framework was discussed in Chapters 2.4 and 2.5.

The third component of the first stage involves the definition of the unit of analysis (Yin, 1994). Within the context of this research, a case study is a

manufacturing network that delivers product-based and servitized offerings. In short, these are called servitizing networks. A case company is a manufacturer that is responsible for the provision of servitized offerings. The primary unit of analysis of this study are inter-organisational relationships pertaining to the offerings. However, in order to understand the relationships amongst the firms there is also a need to focus on the organisations in the network. In fact, the first research question is predominantly about the organisation and its offerings. In the light of this, the units of reference are the offerings identified in the study and the units of data collection are respondents at the organisational interfaces in the case companies.

At this point, it is relevant to note that the entire funding for this doctoral research was provided by the Cranfield Innovative Manufacturing Research Council (IMRC 147) and Cranfield Supply Chain Research Centre (SCRC). Therefore the case companies had no financial role in this doctoral research.

3.5.2 Stage 2 – Fieldwork Preparation

Overall, this stage is primarily related with planning the required approach to the fieldwork. It is argued that a detailed plan is necessary in order to avoid negative consequences or confusion during the data collection process (Denzin and Lincoln, 2005). Nevertheless due to the exploratory nature of this study, an extra care was taken to accommodate the flexibility required to accommodate the emerging themes from the data. According to Yin (1994), there are three components of the instrument development stage; case selection, instrument selection and case study protocol. These are discussed in detail below.

3.5.2.1 Case selection

The selection of the cases at both organisational and individual levels was carried out through a sampling procedure (Patton, 1990). This is an important stage where the empirical setting is selected for the theoretical inquiry. The main distinction between the approaches to sampling is whether the participants are selected in a random manner or if there is an underlying purpose for the

selected participants (Bryman, 2012). Usually in studies where statistical generalizability is the aim, researchers use random or probability sampling methods (Smith, 1993). Quantitative studies are prime examples of probability sampling methods that utilize a form of random selection (Silverman, 2005). On the other hand, purposive sampling approaches are generally used for qualitative research (Denzin and Lincoln, 2005). As part of the purposive sampling, researchers do not seek to select random participants in a systematic manner in order to reach a justifiable representation of the target population. Instead, the main goal of purposive sampling is "[…] to sample cases/participants in a strategic way so that those sampled are relevant to the research questions that are being posed" (Bryman, 2012, p. 418). Purposive sampling requires the researcher to comprehend the characteristics and nuances of the population under scrutiny and accordingly select the relevant cases (Silverman, 2005). Since this doctorate is an exploratory qualitative research that does not seek statistical generalizability, a purposive sampling method was used. Purposive sampling is now discussed in more detail.

3.5.2.1.1 Purposive Sampling

Central to the notion of purposive sampling is the research objective or question which drives the particular characteristics of the participant organisation and the individuals (Bryman, 2012). Accordingly, there are various sampling approaches that are used, depending on the identified research questions. These various types of sampling techniques are detailed in Table 12.

Table 12. The types of purposive sampling

Type of Purposive Sampling	Definition
Extreme or deviant case sampling	Sampling cases that are unusual or that are unusually at the far end(s) of a particular dimension of interest.
Typical case sampling	Sampling a case because it exemplifies a dimension of interest.
Critical case sampling	Sampling a crucial case that permits a logical inference about the phenomenon of interest – for example, a case might be chosen precisely because it is anticipated that it might allow a theory to be tested.
Maximum variation sampling	Sampling to ensure as wide a variation as possible in terms of the dimension of interest.
Criterion sampling	Sampling all units (cases or individuals) that meet a particular criterion.
Theoretical sampling	Sampling related units on the basis of relevance to the research question, theoretical position and contextual account.
Snowball sampling	Sampling a small group of people related to the research objective and these people in turn direct the researcher towards other relevant individuals who are experienced or are aware of the researcher's interests.
Opportunistic sampling	Capitalizing on opportunities to collect data from certain individuals, contact with whom is largely unforeseen but who may provide data relevant to the research question.
Stratified purposive sampling	Sampling of usually typical cases or individuals within subgroups of interest.

(Adopted from Bryman, 2012, p. 419).

Amongst these sampling methods there are overarching similarities. For instance, in both critical case and extreme case sampling an extraordinary or atypical case is selected. In typical case and theoretical case sampling techniques, representative participants are selected that are considered to be normal cases. Thus, purposive sampling techniques are generally used in a complementary manner. For instance, snowball sampling generally precedes a form of purposive sampling (Bryman, 2012).

Nevertheless, sampling is not only the mere action of selecting cases for the research. In stark contrast, it is a task that requires much more attention. It is argued that sampling should be done at different levels (Bryman, 2012). For instance, sampling at an organisation level includes the selection of the case organisation, whereas sampling at an individual level includes the selection of participants in the case organisation. Logically, the criteria for selection at these levels need to be different but informed by the same research objective. In addition, sampling is not confined within the selection of organisations or individuals. Bryman (2012) argues that "sampling is not just about people but also […] principles of purposive sampling can be applied to things like documents" (p. 427). This also entails the sampling of contexts where the interviews are conducted. For instance, the country within which the data collection is conducted is of significant importance in order to position the research in its context. In line with this understanding, the adopted strategic approach for sampling is discussed next.

3.5.2.1.2 Application of theoretical sampling to the case study

For the purposes of this thesis, I followed the principles of theoretical sampling (Eisenhardt, 1989; Patton, 1980). Theoretical sampling emerged from the grounded theory and is considered to be one of its key concepts (Charmaz, 2000). It is defined by Glaser and Strauss (1967, p. 45) as "[…] the process of data collection for generating theory whereby the analyst jointly collects, codes and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges". Thus theoretical sampling does not entail a predefined step by step approach but rather the sampling emerges as the research unfolds. In essence it is the emergent theory that controls the way in which data are collected (Bryman, 2012). In contrast to probability sampling where sample size is the focus, it is the refinement of theory which matters the most for the theoretical sampling technique. "It is iterative in the sense that it is not a one off but an on-going process that entails several stages" (Bryman, 2012, p. 419). Of further importance is typicality which is one of the main determinants of theoretical sampling whereby the case is selected to be an average instance of the general population. Unlike deviant

case sampling, theoretical sampling is interested in typical cases with no extreme conditions (Patton, 1980).

By its nature, theoretical sampling is a dynamic quest for achieving a theoretical description of the phenomena under scrutiny. Thus, of central importance to theoretical sampling is the question of 'how much data is enough'. Glaser and Strauss (1967) stress that, in theoretical sampling, data collection should be continued until theoretical saturation is reached. In particular, theoretical saturation occurs when successive rounds of interviews "[…] have both formed the basis for the creation of a category and confirmed its importance; there is no need to continue with data collection in relation to that category or cluster of categories […]" (Bryman, 2012, p. 420). In other words, theoretical sampling and saturation are intertwined concepts which are underlined by the need to have a flexible approach to continue data collection until data are saturated with the emerging theoretical categories. To this end, Strauss and Corbin (1998, p. 212) provide three underlying conditions to identify theoretical saturation. These are "[…] a) no new or relevant data seem to be emerging regarding a category, b) the category is well developed in terms of its properties and dimensions demonstrating variation, and c) the relationships among categories are well established and validated". Thus, saturation is a key concept of theoretical sampling and should be considered accordingly.

3.5.2.1.3 Levels of Sampling

With these in mind, there are a number of criteria to consider at different levels in order to select an appropriate context for this research. In the light of the research objective and questions, I identified context, industry, case company, offerings, individuals and secondary data sources as the primary levels of sampling within which a systematic selection is required. These levels need to be informed by the objectives of the research. Therefore, I used the following criteria to define the parameters within which the case should be selected. The criteria and the levels for sampling are detailed in Table 13.

Table 13. The sampling criteria, rationale and sampling method

Levels of Sampling	Criteria	Rationale	Sampling method
Context	- The context within which the study will be conducted needs to be in a developed economy	The rationale for this study is built on the premise that servitization is a means of competitive advantage for Western manufacturers with respect to the rise of manufacturing in low cost economies (cf. Baines et al., 2009a; Neely, 2008; Penttinen and Palmer, 2007; Vandermerwe and Rada, 1988).	Based on the principles of theoretical sampling
Industry	- The industry has to be a high-value manufacturing industry	The context of the study is high-value manufacturing, such as jet engine manufacturing, defence or capital equipment manufacturers (cf. Bastl et al., 2012; Baines et al., 2009a; Vandermerwe and Rada, 1988)..	Based on the principles of theoretical sampling
Case Company	- Must belong to high-value manufacturing industry in business-to-business context - Needs to offer servitized offerings - Either product or service or both of these components need to be provided by a supply network	The case company needs to be a high value manufacturer with a network of suppliers and partners that take part in the provision of servitized offerings Since this research seeks to investigate the network configuration for product and servitized offerings, the case company must provide product and servitized offerings in parallel (cf. Cohen at al., 2006; Davies, 2006; Windahl and Lakemond, 2006).	Based on the principles of theoretical sampling
Offerings	- The product and service components must be sold to the customer as part of an integrated package - The offering must engage the network partners in a long-term relationship	The servitized offering is defined as the combination of both product and service components that are sold as a package. These offerings need to be delivered through a long-term relationship (cf. Bastl et al., 2012; Cohen et al., 2006; Windahl and Lakemond, 2006).	Based on the principles of theoretical sampling
Individuals	- Selection of individuals at organisational interfaces	The participants need to be aware of the interaction within the network (cf. Bastl et al., 2012; Windahl and Lakemond, 2006)	Based on the principles of theoretical sampling together with snowball sampling
Secondary Data Sources	- Selection of documents that are relevant to the study	All the relevant documents within the scope of the study including online content need to be screened to collect relevant information to assure data triangulation (Yin, 2009)	Based on the principles of theoretical sampling

In the light of these criteria, a number of high value manufacturers were contacted in order to secure access for this doctoral research. The contact details for the companies were obtained through Cranfield Innovative Manufacturing Research Council (IMRC) and Cranfield Supply Chain Research Centre (SCRC) and the manufacturers which fulfilled the criteria were contacted individually. Nevertheless securing access with the companies proved to be a difficult process since the research required access to the supply network of the manufacturer. Many of the companies indicated their interest in the research however they also informed that granting access to their networks and especially to their customers would be a time consuming process and they were not able to guarantee whether the required access would be granted to their network. As a result of this process, a commercial vehicle manufacturing firm agreed to participate in the research. Importantly, the company agreed to provide access to all the related network members that take part in the provision of servitization.

The commercial vehicle manufacturing industry is important for any manufacturing supply chain since it sits at the core of the transportation and logistics world. Every change in this industry affects all other logistics industries, especially the third-party logistics service providers which are the largest customers of this industry. In order to have more flexibility and greater degrees of freedom, as well as for confidentiality reasons, the company is referred to as ‘TruckCo’. In addition, I refer to their technology partner as ‘TelCo’ which provides the telematics technology. The company is the UK subsidiary of a large European Truck Manufacturer. TruckCo has a nationwide network of dealers which are interchangeably also called ‘suppliers’. In terms of selecting the participants for the study, again theoretical sampling was initially used to interview key senior managers at the focus firm. As the understanding of the case developed, further contacts were obtained at senior, middle and operational management levels in order to obtain a comprehensive view of the phenomena. In order to so, snowball sampling was used, in which every

interviewee was asked to provide details of the relevant employees in their organisations as well as in the external organisations. This approach was carried out throughout the interviews and the identified managers were contacted for the next round of interviews.

3.5.2.2 Sources of evidence

Yin (2002) discusses six sources of evidence which are commonly used in case studies. These are documentation, archival records, interviews, direct observations, participant observations and physical artefacts. Table 14, which is adopted from Yin (2002, p.86), details the strengths and weaknesses of these data collection methods and points out that none of the methods are superior therefore they should be used in a complementary manner.

Table 14. The six common sources of evidence for case studies

Source of Evidence	Strengths	Weaknesses
Documentation	- stable: can be reviewed repeatedly - unobtrusive: not created as a result of the case study - exact: contains exact names, references, and details of an event - broad coverage: long span of time, many events, and many settings	- retrievability: can be low - biased selectivity, if collection is incomplete - reporting bias: reflects (unknown) bias of author - access: may be deliberately blocked
Archival Records	- [Same as above for documentation] - precise and quantitative	- [Same as above for documentation] -accessibility due to privacy issues
Interviews	- targeted: focuses directly on case study topic - insightful: provides perceived causal inferences	- bias due to poorly constructed questions - response bias - inaccuracies due to poor recall - reflexivity: interviewee gives what interviewer wants to hear
Direct Observations	- reality: covers events in real time - contextual: covers context of event	- time consuming - selectivity: unless broad coverage - reflexivity: event may proceed differently because it is being observed - cost: hours needed by human observers
Participant Observation	- [Same as above for direct observation] - insightful into interpersonal behaviour and motives	- [Same as above for direct observations] - bias due to investigator's manipulation of events
Physical Artefacts	- insightful into cultural features - insightful into technical operations	- selectivity - availability

For the purposes of this research, interviews are selected to be the primary data collection method. The interviews are seen as an appropriate method for this doctoral study since they are capable of providing the necessary data to achieve the exploratory purposes of this doctoral thesis. In particular, interviews allow the researcher to explore the servitization concept at strategic, organisational and offering levels while also providing the grounds to investigate into the conditions under which the phenomena under scrutiny unfolded. In the simplest terms, the interview is a data collection method involving the researcher, as the interviewer, asking questions while the research participant answers the questions, as the interviewee. It is common to see interviews used as the only method of data collection in a research (Silverman, 2005). Grounded theory studies are common examples of such primary uses of interviews (Robson, 2011). However, interviews are more generally used in combination with other methods. This is also suggested by many scholars as it allows for data triangulation (Bryman, 2012; Miles and Huberman, 1994; Yin, 2002). Thus, as part of this case study, interviews were also used to obtain field observations, company archives and documents which served as secondary sources of data.

The next decision to contemplate for data collection was to choose the way in which interviews should be conducted. A commonly used categorization of interviews includes structured, semi-structured and unstructured interviews (Bryman, 2012; Robson, 2011; Yin, 2009). The definitions for these three types of interview are presented in Table 15. In general terms, the interview type depends on the depth and flexibility sought by the researcher. In the broadest terms, the more structured the interview, the less flexible and more focused the answers will be (Bryman, 2012).

Table 15. The types of interview and their definition

Types of Interview	Definition
Fully structured interviews	These interviews use predetermined questions with fixed wording, usually in a pre-set order. The use of a greater number of open response questions is the only essential difference from an interview based survey questionnaire.
Semi-structured interviews	The interviewer has an interview guide that serves as a checklist of topics to be covered and a default wording and order for the questions, but the wording and order are often substantially modified based on the flow of the interview, and additional unplanned questions are asked to follow up on what the interviewee says.
Unstructured interviews	The interviewer has a general area of interest and concern but lets the conversation develop within this area. The interview can be completely informal.

(Adopted from Robson, 2011, p. 279)

For the purposes of this study, semi-structured interviews were used. This interview method provided the flexibility required by the abductive research approach. In so doing, it enabled the back and forth movement between extant literature and emerging findings through inclusion or exclusion of questions as the research unfolds and new themes emerge. This is demonstrated in Appendix C. In addition considering that this research is carried out in multiple organisations (i.e. customers, manufacturer or suppliers), the embedded flexibility of the semi-structured interviewing method was instrumental in achieving the flexibility needed to incorporate those differences.

3.5.2.3 Case Study Protocol

The development of a case study protocol increases the reliability of the study since it acts as a guiding tool for the researcher which then drives the integrity and repeatability of the research (Bryman, 2012). According to Yin (2002), the

interview questions are the main part of the case study protocol, but the protocol is not merely a list of questions and comprises the following three elements:

1. Overview of the research
2. Field procedures;
3. Interview protocol;
4. Reporting protocol.

In the light of these, a case study protocol was developed to guide the researcher during the data collection (Lin and Zhou, 2011). Yin (2002) argues that the case study protocol should also incorporate the research objectives, reporting guideline and field procedures. Regarding the research objectives, these were presented earlier in Stage 1 in Section 3.5.1. For the reporting protocol, these are detailed later in Section 3.5.5 as part of the Stage 5 of the case study design process. On the other hand, field procedures are practical instructions that guide the researchers before, during and after the interviews. The field procedures include tasks related to securing access with the participants, having sufficient resources during the interview, creating a data collection schedule and contingency plans for unanticipated events (Yin, 2002). For this study, the field procedures were divided into three categories according to their respective occurrences. The first set of instructions serves as a list of tasks to do prior to the interview. For instance, there is a need to print the contact number of the interviewee in the case a delay occurs during the journey to the related company[7]. In addition, the tasks also include a checklist of items that are required to be present at the interview. The second set of instructions is related to the issues during the actual implementation of the interview. These include reminders about the taking the consent of the interviewee for the recording, clarifying the timing together with the interviewee and more importantly noting the names of the key individuals mentioned in the interview

[7] The interviews were arranged to take place at the participant's organisation and generally they were precededed with a tour of the facilities. In addition, the interviews were arranged to take place in a meeting room where there is no background noise in order not to jeopardise the recording of the interview.

which are potentially identified for further interviews, as part of the snowballing sampling technique[8]. The third set of instructions relates to the tasks required after the interview. This primarily includes two important reminders. The first reminds the researcher to contact the participant after the interview to thank him/her for participating in the research. The second is about reminding the interviewee to send any relevant documents mentioned during the interview. A detailed summary of the field procedures are illustrated in Table 16.

Table 16. The field procedures outlined for the research

Field Procedures	
Timing	**Instructions**
Before the interview	- Print the email correspondence with the interviewee - Print the road map, contact number and the postcode of the location - Items to bring; business cards, printed copies of interview protocol, blank sheets, pens, digital recorder and extra batteries - In the case of an interviewee cancelling on the day of the visit, ask for the next possible date available and attempt to fill that timing with the most relevant employee -
During the interview	- At the beginning of the interview, ask for the consent of the interviewee for recording. In case the interviewee does not agree – proceed with the interview without the recorder - Clarify the timing of the interviewee and ask whether he/she has time limitations - Note down all the key names mentioned in the interview and clarify their roles and ask for their contact details - At the end of the interview, ask the interviewee whether any issues were overlooked that needs to be mentioned - Ask the interviewee if it is possible to obtain the documents mentioned in the interview - Ask the interviewee if he/she wants to be informed about the results of the interview - Ask for the consent of the interviewee for potential follow-up enquiries
After the interview	- Send an email to thank the interviewee for participating in the research - Remind the interviewee about the documents that are agreed to be sent via email

[8] Please refer to the Chapter 3.5.2.1 for the full description of the participant selection.

3.5.2.3.1 Interview Protocol

The final and the most important component of the case study protocol is the interview protocol. This is the document used in the actual interview that provides the basis on which the questions are asked. For the purposes of this research, the conceptual framework of the study was used as a guideline to populate the interview questions. The main areas of inquiry were related to the offering, network structure and relationships which are all driven by the research questions. In addition to these, contextual information was also necessary in order to obtain data related to the research setting which would allow the researcher to understand the phenomena in its real life context. Thus, the initial interview protocol was formed in light of the conceptual framework and by also considering the field procedures. Nevertheless, the interview questions were carefully crafted at the highest level with an exploratory purpose. This was done in order not to bias the emerging data. Thus in the initial version of the protocol, a conscious decision was made to include only the main areas of inquiry at the highest level as the interview questions. As a result, the initial interview questions was composed of three main categories which were related to the 1) personal, organisation and industrial contexts, 2) the offerings and the network structure, and 3) relationships. Within the relationship sections, the five dimensions of Cannon and Perreault (1999) were also included in line with the conceptual framework. The overview of the initial interview protocol is shown in Table 17. As part of the abductive approach, the interview protocol was refined and extended to accommodate the emergent themes. The initial protocol together with its later versions is presented in Appendix C.

Table 17. Overview of the Interview Protocol

The Interview Protocol	
Section A - Interview Checklist	
Description	**Further Details**
This is a check list of items that are required for the interview	These items include digital recorder, extra batteries, business cards, printed copies of the protocol, blank sheets and pens.
Section B – Introduction	
Description	**Further Details**
This is the section where the interviewer introduces the research objectives, informs the participant about the duration and asks for the permission for recording the interview.	In case the interviewee expresses that he/she will be more comfortable without the sound recorder
Section C– Interview Questions	
Description	**Further Details**
1- The first part of the interview questions is related to the context of the research. Here the questions were asked in relation to the personal, organisational and industrial background in order to obtain information about the real life context surrounding the research 2- The second part of the questions is related to the offerings (i.e. research question 1) and the network structure (i.e. research question 2). These two areas of inquiry are organised together since the exploratory interviews showed that the participants answered these two questions together. 3- The third part is related with the relationship attributes (i.e. research question 3). For the relationship dimensions Cannon and Perreault's (1999) framework is used.	1- Context - Personal background? - Organisational background? - Industry Overview? 2- Offerings and the Network Structure - Offering types - Customer characteristics - Structure of the network 3- The Relationship Attributes - Contingencies - Dimensions - Information exchange - Operational linkages - Legal Bonds - Cooperative Norms - Adaptations - Outcomes
Section D – Ending the Interview	
Description	**Further Details**
This is the section where the interview is finalised. At this point, it is important to ask the contact details for the key names mentioned in the interview as possible candidates for future interviews.	Thank the interviewee for participating in the research. Ask if he/she would like to be informed about the results.

At this point, it is now necessary to discuss how the interview protocol was operationalized to gather data for this research. This is the focus of the Stage 3 which is discussed below.

3.5.3 Stage 3 - Data Gathering

Prior to the initiation of the study, a number of exploratory interviews were conducted in order to better structure the order of the questions and to avoid simple mistakes. To this end, the interview protocol was first reviewed by two senior academics who are experienced in the area of servitization and qualitative research. The aim was to identify ambiguities, clarify the wording of questions and allow early detection of necessary additions or omissions. Next, the interview protocol was tested with the two main contacts within the case organisation. This enabled identification of the three types of offering which are used as the units of reference (i.e. basic offering, product/service offering and advanced offering). However, it is worth noting that a distinct, full scale pilot study was not conducted since an abductive approach provided flexibility in terms of moving back and forth with the empirically emerging data and extant literature. As part of the abductive research approach, after every interview a subsequent analysis was made to develop the protocol further by removing the unrelated questions or adding emerging themes to the protocol. In general, the emergent attributes were added to the network as probes under the relevant question. Where necessary, specific questions were inserted as prompts to understand the extent to which the interviewee relates to the emergent themes. The interview protocols are illustrated in Appendix C. Following the exploratory interviews, the case study was initiated with the interviews in the case firm, TruckCo. During the initial interviews at TruckCo, a broad understanding of the operations and the network was developed. After the identification of key relationships for servitized offerings, access was negotiated for the external organisations (e.g. dealers, TelCo and customers). In the next phase, the

interviews were initiated with the dealers and the technology partner – TelCo – while also revisiting the manufacturer to further develop the understanding of the case. In the last phase of the data collection, the customer organisations were also interviewed together with suppliers, partner and the manufacturer. Given that IORs are complex phenomena involving the interaction of many individuals at different levels in the organisation (Oliver, 1990), extra care was taken to select respondents at various levels of the organisation in order to have a multiple view of the same phenomena. Next, the actual implementation of the data collection process is detailed.

The majority of the data collection lasted for two years starting in 2009 and ending in late 2011. During this period, 43 semi-structured interviews were conducted. Of these, 35 were tape recorded and transcribed verbatim and in the other eight interviews the participants requested the interviews not to be recorded. During all the interviews, notes were taken in order to capture the interpretations during the interview process. Overall, the interviews were conducted in 11 different organisations which consisted of TruckCo, its five customer organisations, four dealer organisations and TelCo – the technology partner. All of the case organisations were visited in person and usually the interviews were preceded by a tour of the facilities. The case companies were located in the UK, specifically around the South West, South East, West Midlands, North West, East Midlands, London and East of England regions. In addition to the interviews, I also documented my observations and interpretations while attending various presentations carried out by TruckCo managers, TruckCo sales force, and TelCo. The triangulation of data collection methods in the study increased the reliability and validity of the results (Eisenhardt, 1989; Voss et al., 2002) as well as contributing to the rigour of the results. A summary of the interviews by companies is shown in Table 18 with further details in Appendix B.

Table 18. The list of interviews in the study

Supply Chain Role	Organisation	No. of Formal Interviews	Average Interview Duration (hours)
Manufacturer	TruckCo (HQ)	19	1.15
	TruckCo (Midlands)	5	1.30
Suppliers	Dealer 1	1	2.35
	Dealer 2	4	2
	Dealer 3	2	1.15
	Dealer 4	2	2
Partners	TelCo	3	1
Customers	Customer 1	2	2
	Customer 2	2	1.30
	Customer 3	1	0.40
	Customer 4	1	0.35
	Customer 5	1	0.45
Total		**43 interviews**	**61+ hours**

3.5.4 Stage 4 - Data Analysis

In total, over 61 hours of semi-structured interviews were conducted in this research which accounted for a total of 1,472 pages of transcripts and field notes. Data analysis is considered to be the messiest but the most subjective part of qualitative research (Yin, 2009). The qualitative data obtained in this study was analysed using the principles of template analysis (King, 1998).

In terms of the coding process, King's (2005) assertions were followed as guidelines together with the abductive process of iterating between the extant literature and emerging data. King (2005) argues that structuring the findings of the research around the main themes provides a succinct presentation of the results and a clear thematic discussion, thus enabling a meaningful categorization and representation of qualitative results. During the initial analysis, the interview protocol was used as a guide for the coding process with the help of NVivo 9.0 software. However, extra care was taken not to bias the emerging data. Thus, a conscious decision was made to include only the main categories of the interview protocol in the initial coding template at the highest

level. As a result, the initial template was composed of three main categories which were related to the 1) context of the organisation and its industry, 2) the offerings and the network structure, and 3) relationships. The initial coding template is shown in Appendix D. In addition, Appendix D also contains the later versions of the coding template to demonstrate the changes in the template in light of the emerging themes.

Regarding the coding process, Miles and Huberman (1994) warns that researchers can easily lose focus of their research while coding the interviews due to the lengthy process and the richness of the interview data. Thus, the research objective and questions were placed in a visible position during the coding process to remind the researcher the focus of the doctoral research. Simply put, a code refers to a direct excerpt from the transcripts, field notes, or secondary data and is often labelled with a term in the actual language of the participant (Creswell, 2009). The codes are then collapsed into a lesser number of categories called themes (King, 2004). In line with the guidelines of Miles and Huberman (1994), a theme was formed when two different respondents mention a specific topic more than twice during the interviews. With this in mind, the analysis process was carried out after every interview in order to develop the understanding and refine the protocol for the next interview. This enabled the data to be *"systematically analysed so as to tease out themes, patterns and categories that will be declared in the findings"* (Easterby-Smith et al., 2008, p. 175). As a result, this process enabled various contextual factors as well as additional relationship dimensions to emerge throughout the coding process. As the coding continued, themes were finely defined and understood which enabled the formation of a hierarchical structure. The creation of a hierarchical structure through tree nodes is a common approach used in NVivo 9 software. This enabled links to be established between higher and lower order themes across the template. In conclusion, the development of the final template was an iterative process between emerging data and the resultant modification to the template. The data collection continued until no new insights emerged and the template stayed identical from successive rounds of interviews, which assured theoretical saturation (cf. Glaser and Strauss, 1967). The results of the

analysis were reflected back to the participants for validation as well as for clarifications, and where necessary follow-up calls were made to clarify ambiguities in interpretation. The final structure of the coding template is shown as part of the Appendix D. During the course of the study, the coding template was refined and extended in order to accommodate the emerging themes from the study (see Appendix D). For instance, the coding for the relationship dimensions were initially based on the original five dimensions which are information exchange, operation linkages, legal bonds, cooperative norms and buyer-seller adaptations. To this end, as the interviews were conducted and analysed the manifestations of each of these dimensions within the network emerged as a theme and integrated to the coding template. As a result of the analysis, the findings are developed into reports, presentations and publications that were reviewed by both practitioners and academics. The dissemination phase is explained in the following section.

3.5.5 Stage 5 - Dissemination

The fifth and the final stage of the case study design involve the planning for the outcomes of the research. This stage is usually ignored by many during the case study design (Yin, 2002). Naturally, one would argue that it is not likely to predict the outcomes of the research, thus a specific structure or schedule for the research outputs are not easy to define. Nevertheless, this doctoral research has already resulted in a number of publications. In addition, the researcher is also planning to extend the dissemination of results into further avenues. These are discussed next.

In terms of academic publications, the work carried out in this doctoral thesis resulted in a number of outputs. Amongst these, the most notable one is the article which was peer-reviewed and accepted for publication in the International Journal of Physical Distribution & Logistics Management (IJPDLM) based on the work carried out in this doctoral thesis. In addition, two conference papers were reviewed and accepted into two different international conferences in 2011 and 2012. Furthermore, the researcher is currently developing further

publications as well as other initiatives based on the work carried out in this doctoral research. These are detailed in Table 19 below.

Table 19. The Outcomes of the Research

Academic Publications	
Journals	**Description**
Cakkol M., Johnson, M., Raja, J. "From goods to solutions: how does the content of an offering affect network configuration?"	Accepted for publication in *International Journal of Physical Distribution & Logistics Management* (IJPDLM) (The article is due to appear online in late 2013)
Cakkol, M. "A relational process view of servitizing networks"	This paper is under preparation and it is planned for submission to *Supply Chain Management: An International Journal* (ABS 3*) by the end of 2013.
Conferences	**Description**
Cakkol, M., and Johnson, M. "Supply Network Configurations for Different Product-Service Offerings"	Accepted and presented at POMS 2012 Conference in Chicago.
Cakkol, M., Johnson, M. "An Investigation of Business Model Innovation on Inter-and Intra-Organizational Relationships",	Accepted and presented at EuROMA 2011 Conference in Cambridge.
Practitioner Oriented Outputs	
Title	**Description**
Implications of Servitization on the Supply Chain	This is the final report targeted and presented to the management of the case company based on the findings of the research. Due to confidentiality reasons, this report is only available for the case companies.
Challenges for aligning the supply chain with servitization in the trucking industry	This is an article under preparation. It will be sent to a practitioner oriented trucking industry magazine in order to disseminate the results of the study to a larger practitioner audience.
Other Outputs	
Title	**Description**
A postgraduate course on Servitization in High Value Manufacturing	Building on this doctoral thesis, the researcher is planning to design an elective course for postgraduate students based on the concept of servitization.

3.6 Validity and Reliability of the research - Trustworthiness

There has been a long debate on the validity and reliability of qualitative research findings (Mentzer, 2008; Mentzer and Flint, 1997). In particular, qualitative methods are argued to lack the methodological rigour of quantitative research (Ellram 1996; Seuring, 2008) and quantitative methods are argued to treat the phenomena in a state of 'vacuum' without the contextual background and understanding, thus lacking relevance to reality (Langley, 2007). In order to ensure methodological rigour and accordingly the validity of the results in qualitative research, a number of trustworthiness criteria have been proposed for qualitative research. Hirschman (1986) argued that credibility, transferability, dependability, confirmability and integrity could be applied to ensure the standards of rigour in qualitative methods. In addition to these, Strauss and Corbin (1998) introduced the criteria of fit, understanding, generality and control. These nine criteria as a whole were adopted by various researchers in the field of SCM to be used as reference points to demonstrate rigour (e.g. Flint and Mentzer, 2000; Flint et al., 2002; Mollenkopf et al., 2007). However some scholars, based on their constructivist philosophical stance, tend not to follow the use of these criteria in their research. Nonetheless, I believe, from a pragmatic point of view, that the application of these criteria could potentially increase the trustworthiness and rigour of this research both in terms of data collection and analysis. These nine trustworthiness criteria in the context of this research are as follows:

- *Credibility* refers to the extent to which results appear to be acceptable representations of the data collected (Hirschman, 1986). In essence, this criterion is in line with the internal validity criteria of quantitative research (Riege, 2003). Within this research, the findings were continuously reflected back to the interviewees in order to obtain clarification and assure relevance. The researcher also engaged in a long period of interaction with the case spanning close on to three years, from initial

access meetings to final meetings. In addition throughout the findings section, direct quotations were extensively used both in the text and in the diagrams in order to reflect the reality through the interviewees' actual words. Coupled with these was the abductive case study approach which allowed a continuous iteration between emerging data and extant theory, thus resulting in various emerging themes that were reflected within the modified conceptual framework (see Chapter 4.5).

- *Transferability* refers to the extent to which the findings can be applied to other contexts. In other words, this refers to the analytical generalizability issues (cf. Buchanan, 1999; Butler, 1997; Dyer and Wilkins, 1991; Mitchell, 1983). In terms of quantitative rigour criteria, this is in line with the external validity concerns (Riege, 2003). It is argued that full transferability is not possible since no context can be identical (Goffin et al., 2012) and in particular supply chains are context specific (Christopher, 2011). Erlandson et al. (1993) further contend that transferability of findings is only enabled when the context of the research is fully understood and explicated so that other researchers can draw parallels within their own contexts. To this end, this research pays a great deal of attention to the context of the research. It follows the contention that every research should be treated within its context, history and theoretical background (Pettigrew, 1990). This is evident in the conceptual framework developed since one of the main parts is directly related to the context. This is further elaborated in the findings where new contextual factors emerged as significant which were then integrated into the revised model. In addition, despite the fact that the case study was conducted in one industry, a network of 11 companies was investigated until theoretical saturation was reached (Miles and Huberman, 1994). This assured that the emerging findings were not unique to one single organisation thus allowing for analytical generalizability (cf. Buchanan, 1999; Butler, 1997; Dyer and Wilkins, 1991; Mitchell, 1983).

- *Dependability* refers to the extent to which there is consistency in the explanation of the findings. In other words, this criterion focuses on the reliability and auditability of the findings (Halldórsson and Aastrup, 2003). In terms of providing a transparent account of the findings, direct quotes were frequently used throughout the findings section. In addition, a case explanation document (Yin, 2009) was prepared at the end of the data collection which was further validated with the key respondents in the study. Yin (2009) argues that the development of a case explanation enables the researcher to have a broad and comprehensive understanding of the context. It also helps to refine the results of the case study in a meaningful and consistent manner. In addition, since the data collection and analysis was carried out in an abductive manner (Dubois and Gadde, 2002), emerging issues or concerns were immediately clarified in the following interviews. Where necessary, the interviewees were contacted by email or telephone to clarify the interpretations of the researcher. Last but not least, an interview protocol was used based on the conceptual framework throughout the entire data collection process which ensured consistency across the interviews.
- *Confirmability* refers to the extent to which the interpretations are the result of the participants and the phenomena as opposed to the researchers. In order to establish the link between the data and findings in an objective manner, the summary of the findings were validated with respondents from the case company through the data collection and analysis process. As a result of the abductive research approach, the interpretations were frequently reflected back to respondents which assured the co-creation of knowledge by incorporating the input/feedback from participants.
- *Integrity* refers to the extent to which interpretations are influenced by misinformation from participants. This was assured by clearly communicating to participants that the interviews were of a friendly and non-judgemental nature. In particular, the interviewees were assured that the researcher was not working for any of the case organisations but

rather that the study was part of an academic doctoral research and that the researcher was experienced in interview techniques, having conducted a total of 95 interviews as part of other academic research projects.

- *Fit* refers to the extent to which findings fit with the substantive area under investigation (Strauss and Corbin, 1998). This is partially addressed through the credibility, dependability and confirmability criteria (Mollenkopf et al., 2007). In particular, the use of an interview protocol guided by the conceptual framework enabled the research to have its focus on answering the research questions. At the same time, the semi-structured nature of the interviews allowed the emergence of other important factors for the context, relationship dimensions and outcomes.
- *Understanding* criteria refers to the extent to which the participants buy into the results as possible representations of their words (Strauss and Corbin, 1998). To this end, extra care was taken to check the interpretations of the researcher with the interviewee during every interview. In addition, where necessary the interviewees were also contacted to clarify the interpretations. This resulted in a continuous reality check with the participants of the study.
- *Generality* refers to the extent to which findings discover multiple aspects of the phenomenon (Strauss and Corbin, 1998). Within this research, extra care was taken to interview respondents at different levels of the organisation in order to capture the complexity of IORs. In addition, interviews were sufficient in length and also flexible enough to incorporate the emerging aspects.
- *Control* refers to the extent to which organisations can influence aspects of the findings. To this end, this doctoral research was designed, operationalized and completed by the researcher and at no point in time the participant organisations demanded the results to be changed according to their own ‘agenda’. In addition, no financial funding was provided to the researcher by the case companies. All the related costs of this research were funded by Cranfield University IMRC and SCRC.

This setting provided the researcher with the environment to carry out the research according to required academic standards.

In conclusion, the application of the nine trustworthiness criteria on this doctoral research illustrated that the abductive case study approach adopted for data collection and analysis significantly contributed to the rigour and trustworthiness of this study by closely linking theory and practice.

3.7 Summary of the Methodology Chapter

Chapter 3 presents all the relevant methodological choices and their rationales for the purposes of this research. A summary of the key methodological choices is outlined in Table 20.

Table 20. The key elements of the Methodology

Philosophical stance
- A pragmatist research philosophy (Dewey, 1910; James, 1897; Peirce, 1903)
Research Method
- An exploratory single case study (Eisenhardt, 1989; Voss et al., 2002; Yin, 2009)
Research Approach
- An abductive case study approach (Dubois and Gadde, 2002)
Case selection
- Theoretical sampling (Bryman, 2012; Miles and Huberman, 1994) - A truck manufacturing firm and its network
Data Collection
- Semi-structured interviews, field notes, observations and secondary data - Conducted 43 interviews in 11 companies in the network
Data Analysis
- Template analysis (King, 1998)
Trustworthiness of the Study
- Applied two sets of trustworthiness criteria (Hirschman, 1986; Strauss and Corbin, 1998)

4 FINDINGS

Every business is built on relationships.

Senior Executive at TruckCo

4.1 Overview of the Chapter

This chapter provides a detailed account of the results of the case study. The findings are presented in line with the structure of the order of the research questions. Prior to the findings, the overview of the case company is detailed in Chapter 4.2. It is then followed by the explanation of the three offerings in terms of their customer imperatives and network structures in Chapter 4.3. This is followed by Chapter 4.4 which uncovers the relationship attributes pertaining to the contingencies, dimensions and outcomes. In so doing, the manifestations of these attributes for each of the three offerings are discussed. Next, in Chapter 4.5, the linkages between the offerings, networks structures and relationships are detailed. Finally, in Chapter 4.6, a summary of the findings is presented. Figure 10 is an overview of the entire Findings Chapter.

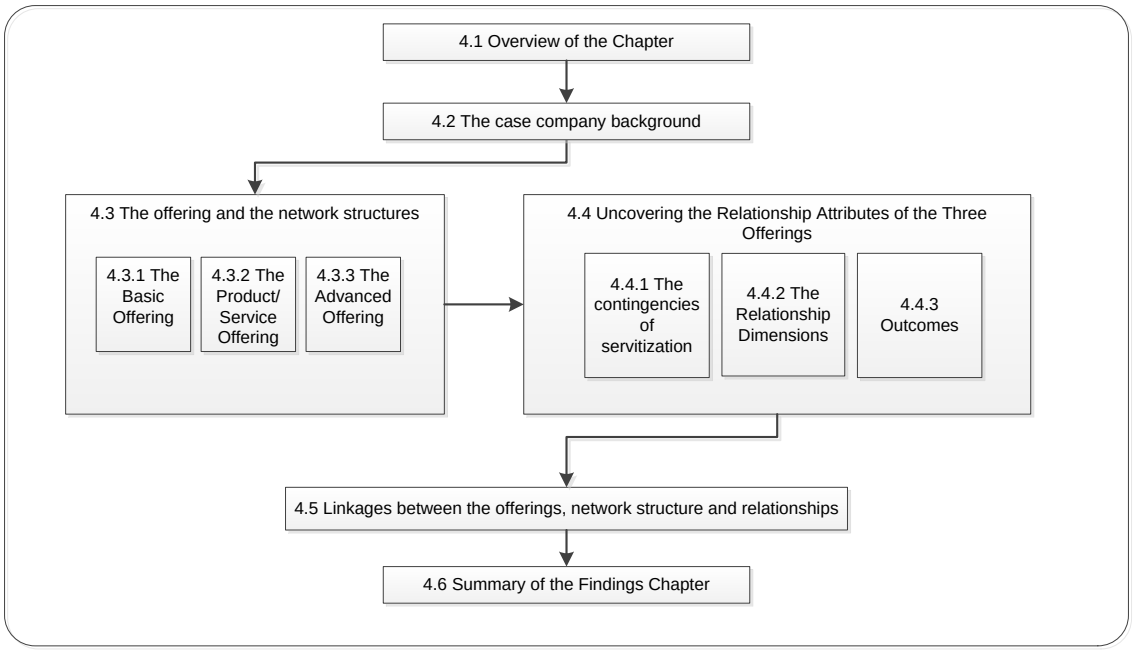


Figure 10. The structure of the Findings Chapter

4.2 The case company background

The case company, referred to as TruckCo, operates in the commercial vehicle industry. The company is historically known for its excellence in product quality and technological innovation. It operates predominantly in the UK and is part of a large parent organisation which functions globally. The industry within which TruckCo operates, has witnessed a slight growth for the last two decades. However, this growth in the industry turned into decline during the economic crisis of 2009. There was a reduction in new product sales as well as some customers going out of business during the crisis. In some parts of the business, the decline was 50-55% in terms of total sales. Since the beginning of 2010, the industry has shown slight improvements and achieved increasing sales. However as of this date, the industry is still behind the position it had prior to the crisis in terms of number of total number of new vehicles sold.

Today, TruckCo is a leading commercial vehicle manufacturer. In this research, the UK subsidiary of TruckCo, which has a turnover in excess of £700 million and employs approximately 1,000 employees, is examined. TruckCo vehicles are sold centrally through sales representatives who are based throughout the dealer network. The product range includes: heavy trucks, medium trucks, buses, coaches and specialist trucks. It is important to point out that the trucking industry in the UK is heavily regulated. Each commercial truck is required by legislation to go through a formal inspection every six weeks. Thus, maintenance of the vehicles is of paramount importance to vehicle operators. The service offering of TruckCo is predominantly centred on the repair and maintenance of vehicles and all the service related activities are carried out by the dealer network. Currently, service offerings include: warranty, inspections, preventative maintenance, driver training, finance and fleet management. TruckCo's customer base is segmented into two clear groups: retail customers which are generally small to medium sized enterprises that represent over 70% of the business, and large national or international fleet customers which represent the other 30%.

4.3 The offerings and the network structures

This section of the Findings Chapter is largely focused on answering *Research Question 1 (What are the different types of products and servitized offerings provided by a manufacturer and what customer imperatives do they need?)* and *Research Question 2 (What are the inter-organisational network structures required to deliver the different types of product and servitized offerings?).*

Over the last two decades TruckCo has seen growth in its market share. Since the appointment of the new managerial board more than a decade ago, TruckCo has adopted a more customer focused strategy. In the course of this period it has progressively expanded its range of service offerings. As a result, the capability to provide services for vehicles across the UK was seen as crucial. The value propositions offered can be divided into three categories: (1) basic product offering, (2) product and service offering, and (3) advanced offering. While the first represents a traditional product offering, the other two

can be considered as servitized. In the next section, I describe these three offerings, and the resultant implications for the network configuration. Table 21 summarises the relationships studied across the three offerings:

Table 21. The overview of relationships studied across the three offerings

Offerings	Relationships Studied
1 - Basic Offering *(Truck + Warranty)* 40% of total sales	TruckCo- Customers
2 - Product and Service Offering *(Truck + Warranty+ Fixed priced maintenance)* 50% of total sales	TruckCo- Customers TruckCo- Dealers Customers- Dealers
3 - Advanced Offering *(Truck + Warranty + Fixed priced maintenance + Telematics technology)* 10% of total sales	TruckCo- Customers TruckCo- Dealers Customers- Dealers TruckCo- TelCo

4.3.1 The Basic Offering

The basic product offering comprises the sale and delivery of trucks to the customer with a warranty. Service does not play a significant role. The customer is free to choose where the truck is serviced – either through TruckCo's dealers or third parties. The offering is largely purchased by small business customers and owner-drivers. These customers placed emphasis on specific product features, aesthetics and, most importantly, price. This segment accounts for nearly 40% of sales.

Retail customers are typically owner-drivers as well as businesses with their own maintenance facilities. Thus, they fulfill all three roles: buyer, payer and user. There has been a tendency amongst owner-drivers not to purchase additional repair and maintenance or extended warranties. For instance:

> *"...they* [owner-drivers] *have a focus on price, but because they don't perhaps understand the mechanics of repair and maintenance packages, they just want to buy a truck and not bother with repair and maintenance..."* (Regional Sales Director, TruckCo)

There was a preference for owner-drivers to acquire repair and maintenance from third party providers as they were viewed as cheaper. Respondents in TruckCo attributed this to a lack of business acumen on the part of owner-drivers:

> *"I wouldn't want to deal with an owner-driver. I tell you, they are more trouble. You need somebody with some financial backing, understanding the financial side of the business…"* (Key Account Director, TruckCo).

This was mostly due to the shorter-term outlook of owner-drivers. However, senior management talked about the need to communicate better to owner-drivers the idea of total-life costs in the sales process in an attempt to move them beyond evaluating the product only on price.

4.3.1.1 The supply network of basic offerings

With the basic product offering, the relationships between the customer and TruckCo were transactional and based on truck price. This is shown in Figure 11. On the left hand side of the figure are the empirical observations pertaining to the general properties of the network (see the two boxes in Observations column). On the right hand side and below the figure are the illustrative quotes from the interviews which provide evidence towards the relationships in the network[9]. Note the figure includes all of the interactions that occur over time. Thus the activities occur throughout the life of the relationship – however short.

[9] Note that the observations are detailed on the left hand side of the figures and the illustrative quotes are illustrated on the right hand side and below the figures. This structure is followed for all the network figures related to the three offerings.

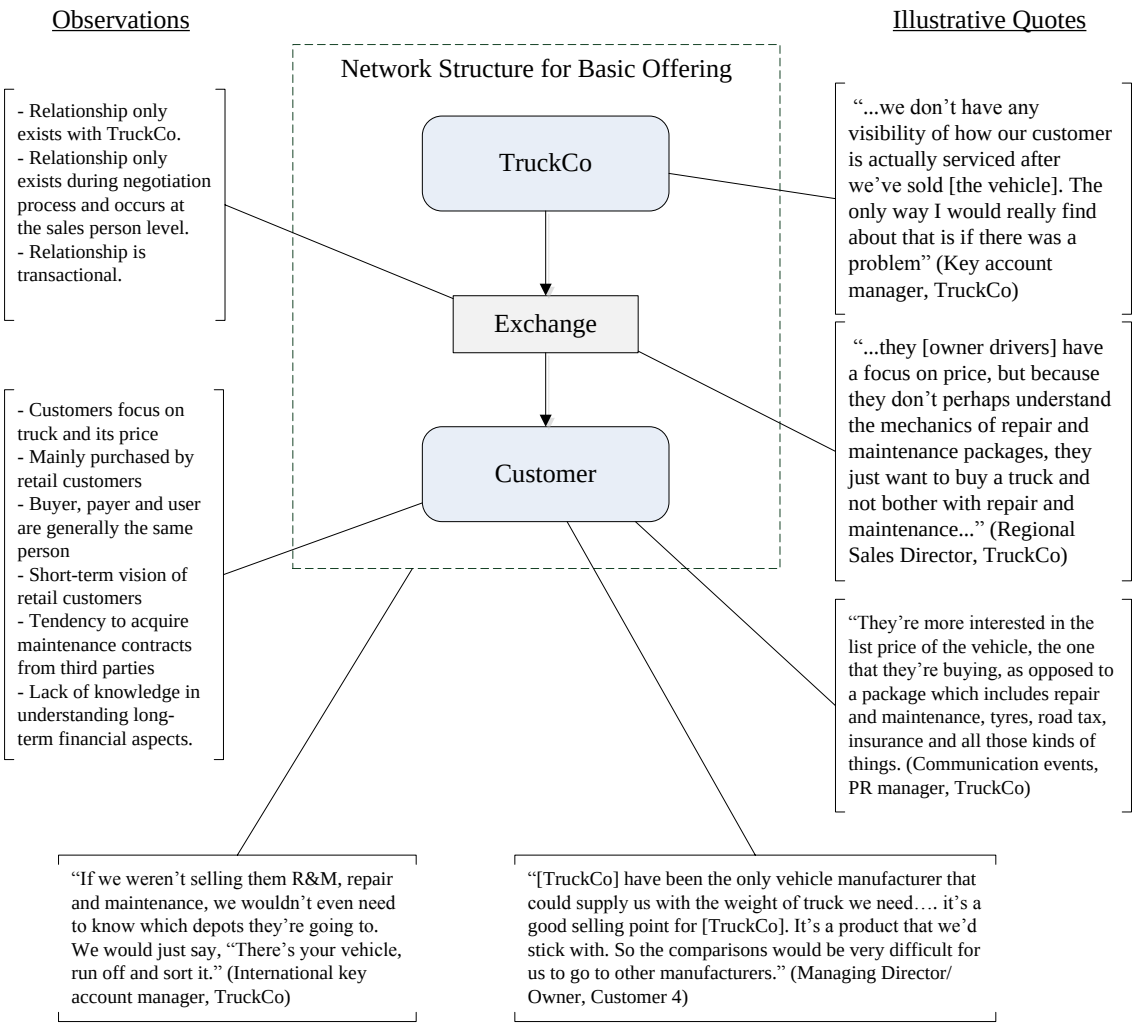


Figure 11. The network of the basic offering

In Figure 11 the interaction is limited to the negotiation between TruckCo's sales force and the customer. The only information exchange occurring during the negotiation phase is related to the purchase of the truck. This network configuration thus comprises three actors based on a transactional, product-based exchange. When a customer purchases a truck, it is sent to the nearest dealer to the customer and the dealer only interacts with the customer during the handover of the truck. The next section gives a detailed overview of the second type of offering.

4.3.2 The Product/Service Offering

Within this offering, the customer is contracted to pay a fixed amount for an agreed amount of time in exchange for the truck and the associated services. The contract duration is generally three years. During this time, all the agreed maintenance activities are conducted by TruckCo's dealer network as part of the contract – excluding accidents and damage. This generally includes routine servicing, preparation and presentation for the Ministry of Transport (MOT) test – a six weekly preventative maintenance inspection – and roadside assistance.

As a result, the value created for the customers by this offering is threefold: 1) It reduces the uncertainty and risk related to the costs associated with the maintenance of the truck; 2) It allows customers to focus on their core business rather than worry about truck maintenance; and 3) It allows customers to avoid the capital costs related to in-house maintenance facilities. These benefits for customers are also risks for the manufacturers.

Approximately 50% of trucks were sold with this offering to medium-sized retail and large fleet customers. There were a number of considerations for buyers of this offering:

> *"...they then start to want to talk about residual values, maintenance packages and all the supporting services that manufacturers offer and even down to like dealer locations; you know, do I have to travel five miles to one or ten miles to another?"* (Regional Sales Director, TruckCo)

Customers purchasing this offering tended to have more complex operations. Thus, the roles of buyer, payer and user were different from those found in the basic product offering. Given the customer base being comprised of medium and large customers, it was common for them to separate departments that managed specific aspects. For example:

> *"...you might have a purchasing department, a maintenance department and an operational department. So one operator looks after the running cost of the vehicle, one section looks after*

> *purchasing the vehicles and one section looks after the maintenance."* (Product Marketing Manager, TruckCo)

Buyers tended to be fleet engineers who were responsible for identifying the types and specific characteristics required of vehicles:

> *"...large companies have a certain mentality...they employ professional buyers and their main role is to get the product for the cheapest price."* (Commercial Manager for Key Accounts, TruckCo)

The finance department in large fleet customers tended to perform the role of payer. The driver constituted the user and rarely influenced the buyer or payer in the customer organisation. The final decision rested with the payer in the customer organisation. Consequently, negotiations over the sale of the product and service contract may be protracted, given the longer-term arrangement. Mainly the negotiation and management of contracts are done by fleet engineers for the customer organisation and key account managers for TruckCo.

4.3.2.1 The supply network of product and service offerings

The supply network is critical in delivering the product/service offering to customers. As shown in Figure 12, service component of the offering increases the interaction between TruckCo and the dealers. This allowed a longer-term relationship to develop with the customer.

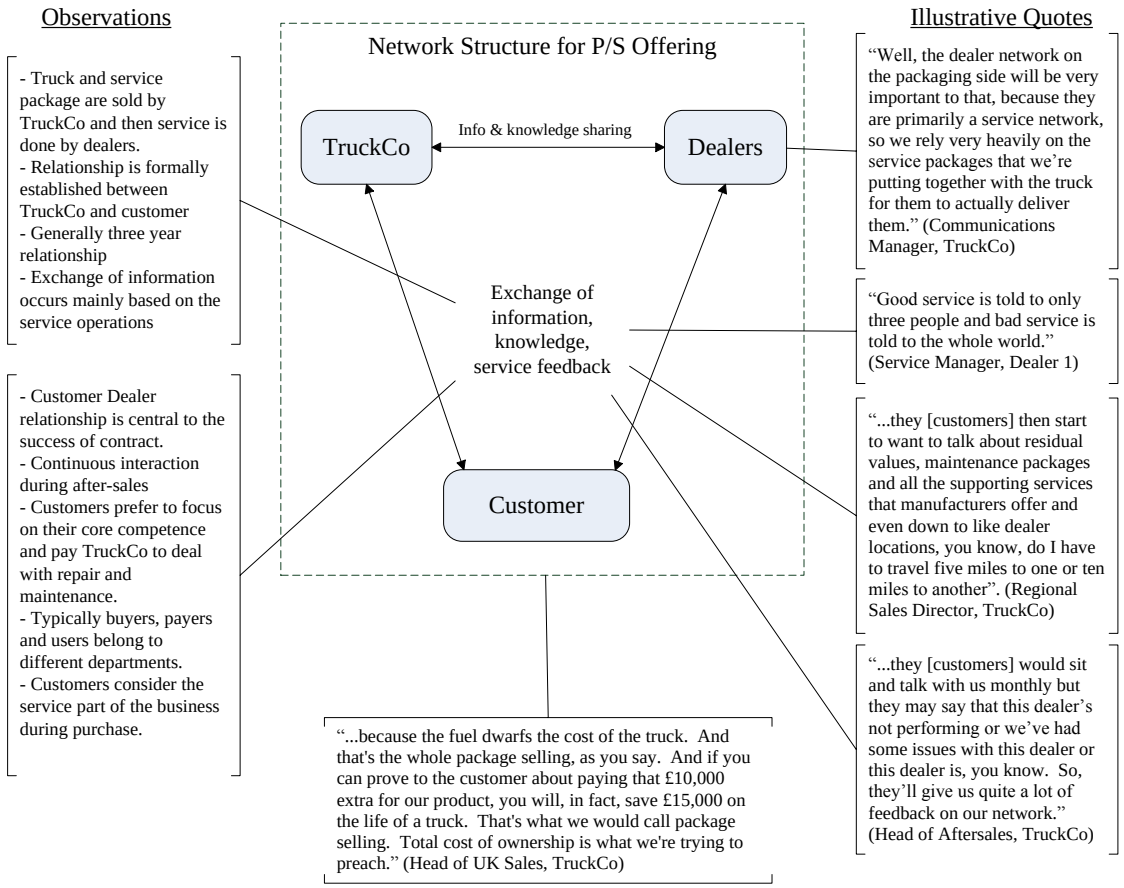


Figure 12. The network of the product and service offering

A number of respondents commented that, as a consequence of daily interaction with customers, dealers develop strong relational ties with the customer. This is illustrated by the following quote:

> *"...they* [dealers] *build relationships with the customers... Because they have to deal with them on a day-to-day basis… Vehicles are coming in all the time, and sometimes that relationship between the dealer and the customer actually does help us to win the deal."* (Commercial Manager, TruckCo)

In this aspect, the dealership network that provided the service was crucial in the sale of the offering. The network simply managed the day-to-day relationship with the customer. The importance of dealers was summed up by two customers who commented:

> *"...when we look at replacing the vehicle fleet, we won't just look at the price of the vehicle, the reliability of the vehicle, but we look at the network as well".* (Fleet Engineer, Customer 2)

> *"... if I feel that the network of dealers can't offer us the service that we want, then that would be a major factor in purchasing new vehicles, which in the past we have done. We've actually moved away from vehicle manufacturers because they couldn't provide us with good* [service] *backup."* (Fleet Management Engineer, Customer 1)

In order to sustain the provision of this offering, a greater level of coordination and sharing of information between TruckCo, dealers, and customers was required to provide adequate support. One sales director described this as:

> *"...we have to work collectively with the dealership network to support them to support the customers..."* (Regional Sales Director, TruckCo)

Thus, coordination between TruckCo and dealers was significant in the sale of this offering. Moreover, there was a need for information to flow from dealers to TruckCo (e.g. feedback related to customer needs), when renewing or extending the service package.

In summary, this network configuration entailed the significant participation of all three actors. Exchanges were dominated by knowledge about service procedures and feedback rather than truck and parts. In particular, resources such as the skills and knowledge of TruckCo's sales force, and dealers' service skills significantly contributed to the delivery of product and service offerings.

4.3.3 The Advanced Offering

The advanced offering was the most comprehensive offering that TruckCo provided. In addition to repair and maintenance services, this offering provided sophisticated telematics[10] services with the truck. Telematics technology

[10] By telematics I refer to '*The use of computers to control and monitor remote devices or systems'*, Department for Transport (2003)

allowed TruckCo to evaluate truck and driver performances, and daily reports were provided to the customer. This allowed TruckCo to identify areas for improvements in driver performance and potential cost savings for the customer:

> *"...if you've got the data you can measure it. If you can measure it, you can deal with it. If you can't measure it, like most customers, they think they know what their fuel economy is, but if you ask them to say exactly what it is, they won't know."* (Regional Sales Director, TruckCo)

Telematics services and training courses were often bundled together at the point of sale. Respondents commented that telematics allowed customers *"to actually manage their business"* more effectively and efficiently. The sale of telematics tended to be limited to customers with large fleets of vehicles. However, only 10% of the vehicles were sold with this service. There was a perception that more effort was needed in marketing the offering:

> *"Telematics is not as big a take-up, and it's maybe an area that the salesmen don't understand as well as the other areas that are fairly straightforward."* (Head of UK Retail Sales, TruckCo)

In this aspect, TruckCo recognised the need for training the sales force to push the offering to customers successfully. This was seen as requiring a shift from a *"product mindset"* to a *"total life cost mindset"* in the sale of the offering. To achieve that, the TruckCo leadership developed a specialised training programme for the sales force. The sales executives who graduated from these courses were now called 'sales consultants' by TruckCo. This was in line with the need to be able to understand and communicate the business value of servitized offerings during the sales process.

4.3.3.1 The supply network of advanced offerings

The supply network for the third offering involved TruckCo, dealers, customers, and TelCo. TelCo was the technology partner of TruckCo which developed the telematics technology for the trucks. The network configuration for this is illustrated in Figure 13.

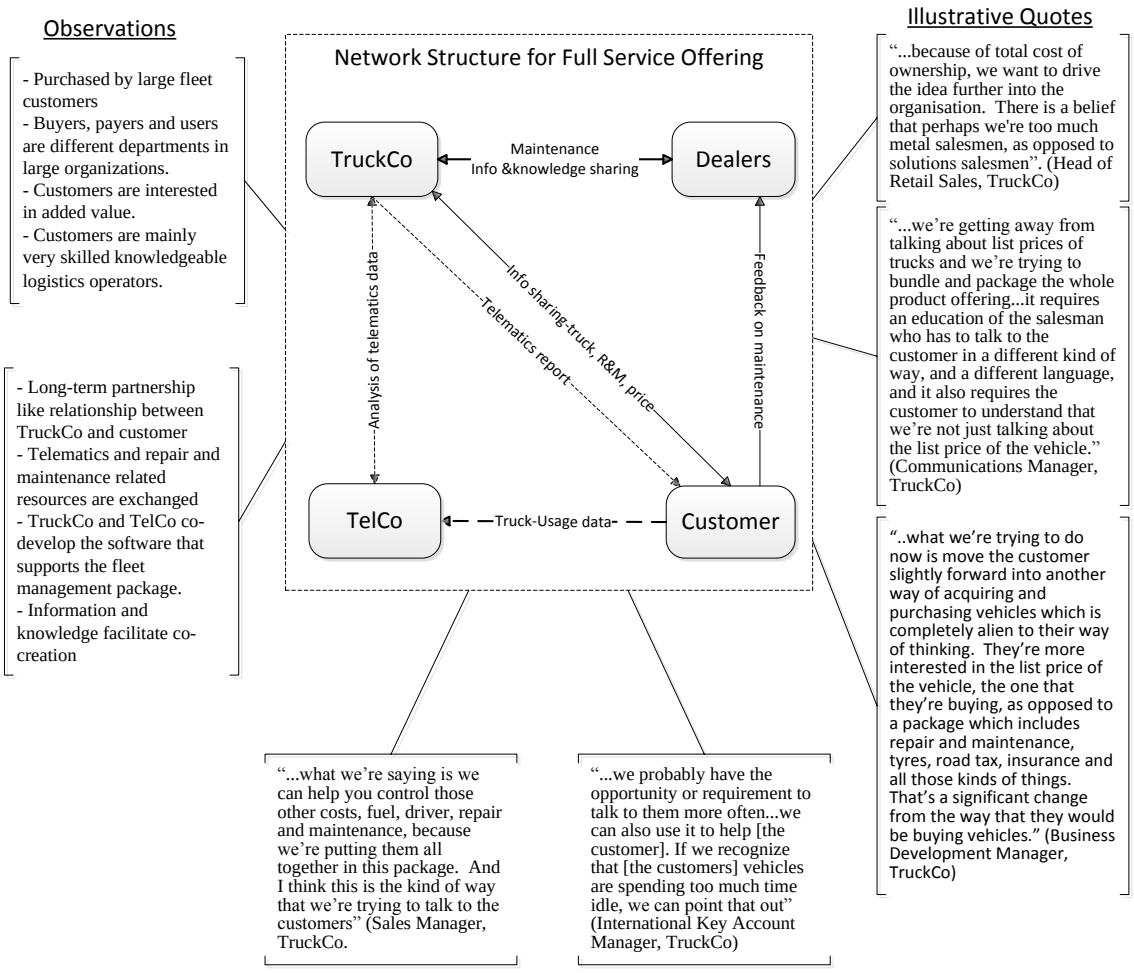


Figure 13. The network of the advanced offering

In Figure 13 the data flow from the customer to TelCo using software developed by TruckCo and TelCo. The data were stored and processed by TelCo, which were then supplied to TruckCo for further analysis. TruckCo then provided customized feedback to customers in daily *"user-friendly"* reports, allowing the customer to evaluate truck and driver performance.

The advanced offering required a higher degree of interaction between TruckCo and the customer. Consequently, the need to develop strong relational ties was seen as paramount.

> *"...they've* [i.e. TruckCo] *gone from providing us a truck fully financed to providing us a managed service, which is what the telematics gives us....* [TruckCo] *are the closest thing to a partnership in our business,*

> *than any other of the people we buy services and products off."* (CEO, Customer 1)

The driver training packages provided on the back of telematics were seen as a means of adding more value for the customer:

> *"...we probably have the opportunity or requirement to talk to them more often...we can also use it to help* [the customer]. *If we recognise that* [the customers'] *vehicles are spending too much time idle, we can point that out."* (Regional Sales Manager, TruckCo)

The network as a whole may be characterized as being relational with frequent exchanges of knowledge. The provision of the advanced offering required four actors within the supply network. The network focused on two different activities: telematics, and repair and maintenance. The telematics activities required a higher degree of interactions between TruckCo, TelCo and customers. This entailed the sharing of information and knowledge on a real-time basis. The repair and maintenance activities required TruckCo, dealers, and customers to work together. The dealer's role was limited to repair and maintenance of trucks.

4.4 Uncovering the Relationship Attributes for the Three Offerings

This section is largely focused on answering *Research Question 3: What relationship attributes support the delivery of the different types of product and servitized offerings?* In line with the conceptual framework, it entails three main areas of inquiry. These are primarily aimed at uncovering the attributes for the contingencies, relationship dimensions and outcomes which are discussed respectively.

4.4.1 The contingencies of Servitization

As part of the conceptual research framework (see Chapter 2.5), long-term relationships and service orientation were identified as the contingencies of servitization which was then argued to impact on the relationship dimensions. In addition to these *a priori* contingencies, the findings also identified further

contingencies which are classified into internal organisational factors and external environmental factors. This section aims to explicate all of these contingencies in the context of the case study. Table 22 illustrates the manifestations of the long-term relationship and service orientation attributes in the three offerings. Next, these are discussed in turn.

Table 22. The emerging contingent characteristics

	Basic Offering	**Product and Service Offering**	**Advanced Offering**
Long-term Relationship	Only transactional relations	Long-term relationship with dealers, customers and TruckCo, all become important	"All vehicles are the same", service levels are agreed customers are looking for "the extra mile or icing on the cake".
Service Orientation	Product customization	- Convenient opening times. - "Focused on customer needs. Anything anytime of the day. Personal attention". - Dealers offer customized service contracts to respond to needs when TruckCo does not. - Until the solutions reach a critical mass in terms of sales they will be all customized to the particular customer	

4.4.1.1 Long-Term Relationships

The first contingency identified in the review of the extant literature was long-term relationships. This was not applicable to the basic offering as the relationship was transactional. However, for the other two offerings, the long-term relationship was frequently mentioned and emphasized by the respondents. For instance, a dealer service manager commented:

> *"… It's like a marriage; you have to build on it. You have to keep working on it…Customer has his own viewpoints, I've got mine. Somewhere in the middle we meet up. We don't fall out over it. That's the relationship and it's just a working relationship"* (Service Manager, Dealer 3)

With respect to the product-service offerings, TruckCo and its customers and dealers engaged into longer relationships with contracts usually spanning three years. This three-way relationship was described by a dealer service manager as follows:

> *"It's always a three way partnership.* [TruckCo] *realizing that they're very good at making trucks; they're very good at selling trucks. If they're weak anywhere, it's in their after sales, but then they have a team of business partners whose core business is looking after the customer, and we* [Dealers] *are very good at it."* (Service Manager, Dealer 4)

Within this understanding, customers of advanced offerings even commented that:

> *"I would say that* [TruckCo] *are the closest to being in a partnership in our business, than any other of the people we buy services and products off."* (CEO, Customer 1)

The customers of advanced offerings however, were seeking further value adding services and therefore started buying the telematics technology. These customers saw the vehicles and their properties as commodities. They argued that today all vehicles are equally reliable and technologically similar. With respect to maintenance services, they perceived service quality or consistency across the network as given, since these are already agreed in the contract. Thus, they were looking for innovative ways of value adding services and telematics technology was seen as the "icing on the cake" or "the extra mile" that made the difference. This is demonstrated in the following quote;

> "*You buy a truck you expect it to start every morning, you expect it to do x miles per gallon….you expect the servicing to be what the servicing costs are.* …. [The telematics] *is the icing on the cake, because the* others [i.e. the products and services] *you take for granted".* (CEO, Customer 1)

To sum up, the basic offering was a transactional relationship thus did not consist of any long-term relationships. In the case of product/service offerings,

long-term relationships usually were based on three-year contracts which allowed the development of strong relational ties with customers and dealers. Within the advanced offering however, customers expected TruckCo to provide extra value adding services in a collaborative manner. As a result, the relationships were predominantly based on a win-win mentality and lasted for a longer period of time without being constrained by the length of the maintenance contracts.

4.4.1.2 Service Orientation

Service orientation in this context refers to understanding and satisfying customer needs by providing a reliable, responsive and customized service. Central to this attribute is the notion of customer focus. For instance, the importance of the manufacturer and the network's customer focus was mentioned many times early in the interviews. This was voiced by both customers and dealers:

> *"….it's the personal touch that people will come and understand your business, and* [TruckCo] *are quite good at that. What* [TruckCo] *have done, you see I really like, is they've given their time and their people to go around the sites and help understand it."* (CEO, Customer 1)

> *"If we have any problems, we have a* [TruckCo] *engineer totally responsible for our contract. He is an excellent guy. He does anything, any time of day you want. That's the relationship that we are looking for and I don't think we'd get it with other manufacturers."* (Fleet Engineer, Customer 2)

> *"…one thing I would impress upon people is never ever give a customer an opportunity to walk away. So if somebody phones up and says, "Can you do, or have you got?" We say, "yes" before he's actually said what he wants."* (Managing Director, Dealer 3)

Within the basic offering, there was not enough opportunity to enact service oriented activities since the relationship was transactional. Yet, TruckCo's vehicles were designed to incorporate a level of customizability to respond to customers' demands. For the other two offerings, there was a consistent

approach to the service orientation. The customers generally demanded convenient opening times, personal attention and an understanding of their needs. An interesting finding was that on some occasions when TruckCo was not able to accommodate the customers' demand on renewing maintenance contracts, dealers responded to offer customized maintenance contracts in order to keep the customers satisfied. This was an indication that the dealers' relationship with customers was at times stronger than the relationship TruckCo had. This was explained by a dealer service manager:

> *"…in order to make it right for the customer, this is where the relationship comes in…we knew there was an issue, we gave* [TruckCo] *every chance to deal directly with their customer. When they had to say, we can't reach an agreement, we said okay, now you step aside and we'll use our relationship with the customer to provide a solution. We were prepared to take the risk on these vehicles to support our customer and we did."* (Business Development Manager, Dealer 2)

When asked about the reasons for taking that kind of risk as a dealer, one managing director answered pointing out the importance of customer focus:

> *"Well, it certainly keeps the customer occupied. It keeps them coming here. That's the thing. I won't say that we've made a fortune. It's regular payments and regular work, but it does tie the customer into you and that's what you've got to do. Keep them somehow. That is the main objective; tie the customer back to you."* (Managing Director, Dealer 1)

A unique feature of the advanced offerings was the level of customization. Each advanced offering was significantly customized to fit the needs of the particular customer and thus they were very different from each other. For instance, some advanced offerings were particularly geared towards achieving better driver performance therefore driver training was the main issue. Since telematics technology allowed the management to see the exact faults of the driver, the training programmes were customized to that individual. Some drivers received extra training on cruise control techniques whereas some drivers were trained in exhaust braking techniques. On another occasion, a customer was planning to

decrease its carbon footprint. Therefore, they demanded a strong focus on environmental issues. As a result, the daily feedback reports prepared by TruckCo and TelCo focused on emissions and environmental aspects. Overall, these instances were all evidence of the highly customized nature of advanced offerings.

In conclusion, it can be argued that the advanced offerings were the offerings with greatest customer focus. It was observed that these offerings evolved organically as a result of the work partnerships according to the customers' needs. A senior after-sales manager of TruckCo explained that the advanced offerings had not yet reached a critical mass, thus they did not have a systematic approach to these offerings.

4.4.1.3 The other emerging contextual attributes

A number of contextual factors also emerged through the analysis of the case results which were previously not stated in the extant literature. However, it is essential to note that these factors are all directly related to the case organisation or the industry. In other words, these attributes are not directly related to the offerings but could best be described as institutionalised contextual factors. However, these attributes continuously emerged through the interviews as important drivers for the adoption of servitization. They are: *leadership, technology, customer's demand* and *legislation* which are discussed respectively in the next paragraphs under two main categories – internal organisational context and external environmental context.

4.4.1.3.1 Internal Organisational Attributes: Leadership and Technology

Leadership is strongly associated with the CEO of TruckCo. Despite the large size of TruckCo and its network in terms of employee numbers, the majority of the interviewees whether in TruckCo or in other network members acknowledged that they had an easy access to the leadership. The leadership was visible and transparent to all the employees involved in the network. Coupled with this leadership style, it was widely known that the move towards servitized offerings was introduced and advocated by the leadership. In

particular, the CEO was the main driver behind the 'philosophy' of selling total solutions as opposed to selling 'a big piece of metal'. As one senior executive noted:

> *"…when we* [TruckCo leadership] *started putting in place, I would say, the different route to market. Everybody was heavily, and the truck industry is heavily, driven by 'what is the price of the truck?' And* [CEO] *had this vision that was sell pence per kilometre, as opposed to selling a truck's £30,000, £40,000 at that time".* (Head of After-Sales, TruckCo)

> *"Total cost of ownership is what we're trying to preach. And* [CEO] *is one of the best exponents of that. He's like a reborn minister"* (Head of Retail Sales, TruckCo).

The leadership was, however, seen as fundamental to the success of servitized offerings. This was acknowledged not only at the senior executive levels but also at lower levels of management in TruckCo as well as in other network members:

> "[CEO] *is quite convincing with the way he brings it across, and the way he gets everyone to buy-in to it, which is half the battle. So it's good to all be like heading in the same direction".* (Communication Executive, TruckCo)

> *"I know that the leadership and* [CEO] *in particular, is very accessible and if I pick up the phone I can just give them a ring. Now that gives me a great deal of comfort when dealing with customers".* (Aftersales manager, Dealer 3)

In conclusion, leadership and the CEO in particular were seen as the main advocates and drivers of adopting servitization strategies. Thus, it was observed that the role of leadership was fundamental to the provision of servitized offerings.

The second contextual factor was the adoption of *technology.* In essence, technology is a key aspect of any modern truck. However, the main technology which had a great deal of impact on TruckCo's offerings was telematics. It enabled the creation and monitoring of information in terms of truck's location,

fuel consumption and driver behaviour. The analysis of this information resulted in previously unavailable knowledge that benefitted customers to a great extent. This allowed TruckCo to provide operational information to the customers. As one executive noted:

> "I think we're ahead of the game with telematics, which also is a big key part to controlling and advising on how to control fuel costs, but because that's the key to… it's the advising" (Sales Director, TruckCo).

Thus it can be concluded that technological innovations are also fundamental to the provision of services. Especially, new technologies could create or enable previously inaccessible resources for the use of customers and the network.

Importantly though, there is a distinction to make between the commercially available technology and the technology adopted by manufacturers. Again, the leadership of TruckCo was the main driver to proactively adopt telematics technology to provide added value for the customer. It was leadership's initiative to partner with TelCo with the aim of adopting this technology to the trucking industry. It is also important to point out that the telematics technology was not used as extensively by competitors of TruckCo, which again shows the importance of leadership in adopting commercially available technology.

4.4.1.3.2 External Environmental Attributes: Customer's demand and Legislation

These factors are related to the factors outside organisational boundaries. The first contextual factor that emerged as important was *customer's demand.* Many respondents noted that throughout the last 10 years there had been drastic changes in terms of the customers' demands. Traditionally, truck operators, the largest customers of the industry, also had in-house maintenance facilities where they were servicing their own trucks. However, the industry evolved and today only a few truck operators have such facilities. This, in turn has impacted on the demand for repair and maintenance services from manufacturers. In general, the customer's demands have evolved and as a marketing manager noted, the process then became more professional:

> *"The truck sales have become more professional, and it's helping to drive the industry to become a little bit better in their perception. You go back a few years, you find that a transport operation would buy some trucks and do his own maintenance, and try and find business for his trucks, and he'd have some work and so everything was difficult".* (Product Marketing Manager, TruckCo).

> *"Five years ago, a customer might say to us is your truck good on fuel. We'd say well, it'll do something around about this type of figure, if…. that's no good any more. They need to trial our truck, they need to trial it in operation, they need to see how the driver's driven it, how its journey times react, as much as its fuel consumption. There's much more attention to detail. The industry seems to have woken up."* (International key account manager, TruckCo)

The second external factor that emerged as significant is *legislation.* This theme refers to the impact of rules and regulations on the industry. There are three main areas of legislation which have a significant impact on the demand for services in the industry. The first is around the requirement of the UK Ministry of Transport (MOT) for every commercial heavy truck vehicle to go through a formal inspection every six weeks. This is vital for the operations of customers as failing the test would mean the truck is not roadworthy until the faults are fixed. Thus, this legislation drastically affects the perception of service by customers. Interestingly, our respondents noted that in some other European countries where these tests are held only twice a year, there was much less emphasis on the quality or importance of services. The second set of legislation is around UK tax regulations where, from a financial perspective, it was more beneficial for companies to have fewer assets by leasing or renting vehicles. This in turn again increased the demand for servitized offerings with financial lease contracts:

> *"And the financial advantages of not owning that vehicle, or fundamentally renting it, shall I say, have become more and more prevalent in the last few years because of changes to tax laws and advantages to the tax situation. So it's grown in percentage terms year on year on year to a point now where the vast majority are connected to either a finance deal or a contract".* (Head of Network Development, TruckCo)

The third set of legislations is based on the EU carbon emission regulations, which are called Euro 4, Euro 5 and Euro 6 that were introduced in consecutive years. With Euro 4 and Euro 5 already in place, Euro 6 is due to be introduced in January 2014. These legislations lower the acceptable standards for the CO_2 emissions footprint year after year. This again was important for the operations of the customer, since not meeting these standards meant trucks are not allowed to operate. A customer communication executive in TruckCo explains the impact of Euro legislations in the following quote:

> *"*[...] *when we did our Euro 4 campaign and it was like a legislation change with the vehicles. And it became really important that they reached this legislation* [...] *A lot of the manufacturers just kind of ignored it* [...] *But we did a proper campaign out of it and started talking about fuel efficiency* [...] *I mean I think that kind of really emphasized it, because we went for a different engineering solution to all the other manufacturers, and they said that as a result we wouldn't have been so fuel-efficient. But, it turned out we were better* […]*. And then in the first year we did all this stuff and it was really orientated around the services, and that was like a noticeable shift."* (Customer communication executive, TruckCo)

In the light of this, it is important to point out that the legislations acted as an influential driver for shaping customers' demands. For instance, the six week formal inspection required by the MOT drastically changed customers' views on services. Various interviewees pointed out that this legislation made maintenance and repair services as important as the truck itself for many customers who had historically considered services as secondary or peripheral to the product.

In conclusion, four contextual factors are identified in this section and their role in the adoption of servitization is highlighted. In particular, long-term relationships and service orientation emerged as significant and the manifestations of these attributes for each of the three offerings are detailed. Apart from these contingent factors, other factors emerged that were related to the internal and external organisational contexts. For the internal organisational

context, leadership emerged as an important factor for servitization. Of particular importance was the adoption of technology by leadership. On the other hand for the external organisational context, customers' demand and legislation were the main emerging factors. To this end, legislation was seen as a driver for shaping customers' demands. These contextual factors, together with the contingencies, impacted on IORs throughout the TruckCo network. Next, I aim to explicate the impact of servitization on relationship dimensions with respect to the three main offerings.

4.4.2 The Relationship Dimensions

This section provides a detailed description of the findings pertaining to the relationships with respect to the three offerings guided by Cannon and Perreault's (1999) relationship dimensions. In terms of data collected, respondents were asked questions in the light of the five relationship connectors namely: information exchange, operational linkages, legal bonds, cooperative norms, and buyer-supplier adaptations. The following sections detail the attributes which emerged from each relationship dimension in the context of this case study. Additionally, a number of important attributes emerged from the data collected which did not fit into any of the five dimensions. These are explained in the Emerging Attributes Section. In the next sub-section the information exchange dimension is detailed.

4.4.2.1 Information Exchange

Cannon and Perreault (1999) define information exchange as expectations of open sharing of information that may be useful to the organisations involved in the relationship. To this end, respondents were asked questions around the way in which they communicate, interact and share information with other network members. Within the respondents of this study, *communication* and *knowledge* emerged as the two main attributes for this dimension. Across the three offerings there were significant differences. These are documented in Table 23 and elaborated further in the following sections.

4.4.2.1.1 Communication

Communication in this context is defined as the conversation or discourse amongst the organisations in the network. The actual content of the communication is described in the next section under the attribute 'knowledge' which was initially coded under communication but it grew to become an individual attribute in its own right.

Table 23. The attributes of the information exchange dimension

<table>
<tr><th></th><th></th><th>Basic Offering</th><th>Product and Service Offering</th><th>Advanced Offering</th></tr>
<tr><td rowspan="4">Information Exchange</td><td rowspan="3">Communication</td><td>- Occurs at the sales people level

- Driven by truck cost</td><td>- Happens at the key account management level.

- Service and price driven</td><td>- Leadership is also involved.

- Driven by business outcomes</td></tr>
<tr><td colspan="3">- Face to face communication is expected by both dealers and customers (applies to product/service and advanced offerings)</td></tr>
<tr><td colspan="3">- Market intelligence needed from TruckCo (applies for all).</td></tr>
<tr><td>Knowledge</td><td>- Only warranty related

- Transparency or sharing of knowledge to improve operational efficiency.</td><td>- Mainly mechanical and technical knowledge in terms of parts and service procedures.</td><td>- Focused on business knowledge mediated by technology. (how telematics can add value to business)</td></tr>
</table>

Within the *basic offering*, communication occurs only between TruckCo and customers. This conversation is limited to the negotiation phase and the communication is only about a truck's price and its properties. Buyers of this offering only interact with the sales force of TruckCo during the purchasing process. However, for the *product/service offering,* the interaction occurs between the key account managers of TruckCo and the fleet engineers of

customers. This was considered as a result of the differences in the type of customer served. For the basic offering it was mainly owner-drivers, whereas for the product/service offerings it was national and international firms. Within the product/service offerings, service was considered to be as important as the price of the truck and was also a major issue of concern for customers.

With respect to the *advanced offering*, a whole new picture emerged. Interestingly, leadership of TruckCo and customers were also involved in the communication. During the course of the study, board members of TruckCo including the CEO were holding formal and informal meetings with the senior management of customer organisations to discuss avenues of improvement with regard to telematics technology. These meetings were not necessarily problem-based but were more about developing new ways of utilizing data obtained from the telematics. It is important to mention that these discussions were all targeted towards improving the end-performance of the customer. In turn, TruckCo was using these customers as reference points for future contracts.

> *"Every year he* [CEO of TruckCo] *wheels me out to a commercial vehicle show to stand at a stand and say what's happening and do an interview for an hour* [with the potential customers]*"* (CEO, Customer 1)

It is fair to say that market intelligence with respect to the type of offering was required by the dealers. This was considered essential for all types of offering. Specifically for the second and third offerings, face-to-face communication was seen as important both for dealers and customers due to the long-term orientation of the relationship.

4.4.2.1.2 Knowledge

Knowledge within this context is essentially defined as the data, information or know-how transferred during the act of communication. For the *basic offering*, only warranty related knowledge was exchanged amongst the network members after the actual purchase of the truck. For the *product/service offering* however, the inclusion of the service part into the contract required partners to

continually seek information about repair and maintenance activities. The dealer network was mainly concerned with the routines and procedures related to the maintenance of the trucks. TruckCo required dealers to follow strict operational routines for the repair of every fault. Every single fault on the truck had a specific maintenance code. These procedures detailed the number of steps, parts and the amount of time required to repair a particular fault. Therefore, dealer service managers and technicians frequently consulted with TruckCo's online maintenance services. This approach was generally not favoured by the dealers as it consumed a lot of time and restricted autonomy during the repair and maintenance processes. Customers of this offering on the other hand, were mainly concerned about the service levels. Therefore, there was a continuous day-to-day interaction between the dealer network and customers regarding the time, content and accuracy of the maintenance activities. The knowledge exchanged amongst TruckCo, customers and dealers was based on the contract. In the dealers' case, it was based around the franchise agreement but more specifically around dealer performance measures. In the customers' case, again the contract was frequently referenced.

Contrary to the other two offerings, *advanced offerings* were mainly about creating new and innovative know-how for customers based on telematics technology. The aim was to find ways in which telematics could add value to customers' business. For instance, the telematics allowed the customer to change the usage of the trucks to suit organisational goals. This was achieved by the driver classification programme which enabled the customers to monitor their drivers' performance with respect to fuel usage. Then, with the help of TruckCo, the low performing drivers were sent on further training programmes to improve their driving technique.

Of further note is the importance of knowledge sharing or transparency. This was frequently mentioned in customer and dealer interviews. It was not specific to any of the offerings but rather applied to all. In particular, both the dealer network and customers were expecting TruckCo to share more information and knowledge regarding its parts availability and service procedures.

4.4.2.2 Operational Linkages

The *operational linkages* dimension is defined as the extent to which the systems and processes are linked in order to facilitate operations within the interacting organisations (Cannon and Perreault, 1999). For this dimension, respondents were asked questions about the systems and operational routines that link their organisation to other network members. Within the case of TruckCo, the main operational aspect was the repair and maintenance activities. Traditionally, TruckCo was perceived as a procedure driven organisation. With the introduction of repair and maintenance services, customers demanded a consistent approach throughout the dealer network. This required TruckCo to introduce additional systems, procedures and measures across the whole network. This was seen as a way to control the service standards of privately owned dealers. As a result of the analysis, *support systems* and *preventative maintenance services* emerged as the main attributes in this dimension. These are briefly summarized in Table 24 and further detailed below.

Table 24. The attributes of operational linkages dimension

		Basic Offering	**Product and Service Offering**	**Advanced Offering**
Operational Linkages	Support Systems	- Product support in terms of warranty	- Service related based on mechanical and technological support	- Focused on business support
		- New online electronic systems - Accessibility is important. Parts discount is considered to be support both by dealers and customers. - Equal treatment (or "consistency") is expected by dealers		
	Preventative Services	- None	- Driven by dealer performance measures which are agreed at the beginning of each year between dealers and TruckCo	- Telematics (better driver training, less fuel, fewer accidents therefore better delivery, less CO_2, instant location knowledge, used to track stolen vehicles)

4.4.2.2.1 Support Systems

Similar to other industries, trucking and logistics industries are constantly evolving with the advances in information technology. Technological innovations transform the nature of linkages between organisations and the way exchange related activities are performed. The *support systems* in this context refer to the inter-organisational information systems which connect the different firms in the network. The technology related support systems were put in place by TruckCo after the introduction of service offerings. These mainly included new electronic systems that were available online. The systems were used for every offering irrespective of the type of contract. For instance, an online real-time inventory system was introduced to increase the efficiency of service activities which was also used for any truck in the workshop.

Within the *basic offering*, support systems were mainly around the product in terms of warranty. Within the *product/service offering*, the support was perceived in terms of product and service. Here, mechanical and technical support in maintenance activities was the main focus. However, for the *advanced offering*, support meant business support for the customers. Specifically, it meant the utilization of information obtained from telematics to provide added value for customers.

The general perception of dealers with respect to TruckCo's technical support was very satisfactory. On the other hand, the business support received from TruckCo was equally unsatisfactory for dealers. This was generated by the fact that business support was generalized and an average supplier was taken as a reference to demonstrate the financial and marketing support. This was not perceived as value-adding by all the dealers since they required individualised support. During the time of the study, the senior management of TruckCo had started a number of initiatives to address this issue. In addition, initiatives such as parts discount campaign (which was a discount campaign where the parts prices were matched with the lowest price on the market) that was also

perceived as business support both by the dealers and customers. Similarly to the dealers, customers also perceived the technical support of TruckCo to be satisfactory.

4.4.2.2.2 Preventative Services

The second attribute in the operational linkages dimension is *preventative services*. Preventative services were activities that provide high product availability by reducing or anticipating unplanned breakdowns. Within the *basic offerings* there were no such services. However, for the other two offerings, this attribute was perceived to be operationally important by the customers. Thus, it also had implications for the dealers. For the *product/service offering*, this only involved the dealer performance measures which were aimed at increasing the level of maintenance with some additional aspects such as pre-scheduling the maintenance of a truck before a particular part actually broke down. Another additional service was to make reminder calls to customers regarding their MOT or incoming service checks. Within the *advanced offering*, additional preventative services were made available through the utilization of the telematics technology. An example is the customized driver training programmes. In an industry where driver and fuel costs are the main determinants of profitability, driver training is of paramount importance to businesses. As a whole, for customers these preventative services meant:

a. Less fuel costs (through customized driver training)
b. Fewer accidents (through customized driver training)
c. Lower CO_2 emissions (through customized driver training)
d. Better delivery for end users as a consequence of fewer accidents, and
e. Instant vehicle location knowledge (through the tracking systems as part of the telematics technology)

In conclusion, preventative services for the product/service offering were related to maintenance and were dealt with within the network. On the other hand, for the advanced offering, preventative services were created through telematics technology and were related to the customer's business.

4.4.2.3 Legal Bonds

"Legal bonds are detailed and binding contractual agreements that specify the obligations and roles of both parties in the relationship" (Cannon and Perreault, 1999, p. 443). To this end, respondents were asked questions about the contractual agreements amongst the network members. *Nature of Contract* emerged as the main attribute within this dimension (see Table 25). This attribute refers to the content of the formal contractual agreement in an IOR. In TruckCo's case, there were a number of different contracts. The relationships between TruckCo and its dealers were based on a standardized franchise agreement. Nevertheless, day-to-day service activities were driven by dealer performance measures. This was a financial incentive system for dealers based on their service operations performance. The general service performance was measured in terms of maintenance performance, parts performance, brand image and customer satisfaction. And on the condition that the desired service performance is achieved for the customer, the dealers receive extra financial benefits. The relationships with customers, however, were based on the type of offering. For the *basic offering*, it was a factory standard warranty contract. For the *product/service offering*, the contracts were mainly customised to fit the needs of the particular customer. These contracts varied according to the number of services and spare parts included in the contract. Some customers opted to include all aspects of the maintenance whereas some customers only opted for the minimum number of spare parts included in the contract. On average, these contracts lasted for three years. Within these offerings, most of the inter-organisational discussions were based around the contract. For instance a major issue was about the customer's actual understanding of the contract. Some customers were not aware of the exact content; therefore every maintenance activity which required extra payment for the customer resulted in a discussion about what was included or excluded in the contract. This was a major issue for some customers:

> *"…some customers are not really aware of their contracts. So when we charge them for an expense they always argue... I believe sales people of* [TruckCo]

should be more open with the customers about what's actually in the [contract]" (Business Owner/Manager, Dealer 3)

In essence, for product/service offerings, contracts were at the centre of the relationships between TruckCo, customers and dealers. The importance of contract issues in product-service offerings was expressed by a service manager in Dealer 4:

> *"With R&M* [repair and maintenance] *contracts* [i.e. product/service offerings] *you are not dealing with a person, you are dealing with a product and a manufacturer."* (Service Team Leader, Dealer 4)

Interestingly though, within the advanced offerings, contracts were very rarely mentioned during the discussion between TruckCo and the customers. These inter-organisational discussions were mostly about collaborative work partnerships in terms of how both organisations can 'move the targets further'. However, the interaction with the dealers was again based on contractual agreements (same with the product/service offering). Of further note is the inclusion of TelCo (i.e. TruckCo's technology partner) in the relationship. Even though the contract was signed by TruckCo and the customer, the dealers were providing the service and TelCo was providing the telematics technology. Therefore, a multi-layered complex interaction was taking place with relatively little reference to contracts. A summary of the manifestations of the nature of contract within each of the offerings is shown in Table 25 below.

Table 25. The attribute for legal bonds dimensions

		Basic Offering	**Product and Service Offering**	**Advanced Offering**
Legal Bonds	Nature of contract	Warranty related	- Service levels and part prices are determined - Whether the contract is detailed or not is very important	- Not based on contract. - Focus is mainly on collaborative work partnership

4.4.2.4 Cooperative Norms

Cannon and Perreault (1999) defined cooperative norms as the expectations that exchanging parties have about working together to achieve mutual and individual goals jointly. For this dimension, respondents were asked questions about the behavioural expectations regarding their network partners. N*ature of relationship* emerged as the main attribute for this dimension (see Table 26). This refers to the characteristics of relationships. A relationship can be characterized as transactional or collaborative. An organisation might have thousands of suppliers with various types of relationship which can range from a transactional relationship with a commodity supplier to an integrated relationship with a partner organisation. It can be observed from the TruckCo case that the type of relationship an organisation has is closely linked with the expectations manifested in that relationship. For the *basic offering*, the relationships with customers were transactional with short-term duration, low information exchange, fewer communication channels and relatively lower levels of commitment on both sides. However, for the *product/service offering* where the general interactions could be characterized as relational, there was an evident emphasis on the longer term outlook, increased information exchange, frequent communication with higher levels of commitment and trust. In addition, the orientation of the relationship moved away from a win-lose mentality towards a win-win mindset for all parties in the relationship. Nevertheless, this was more visible in the *advanced offering.* In addition to the already explained relationship with the dealers, there was a much more integrative and collaborative relationship between customers and the TruckCo-TelCo partnership. In essence, the importance of the nature of the relationship could best be understood by understanding the perception of TruckCo towards TelCo and the dealers. Despite the fact that TelCo and the dealers were both suppliers, TruckCo was historically engaged in a partnership-like relationship with TelCo. This, in turn, meant much more commitment and trust on both sides with no visible threats from opportunistic behaviour. With the dealers however, TruckCo was much more reserved in terms both of its expectations and information transparency, despite the fact that they are referred to as ‘strategic

partners' by many TruckCo executives. A summary of the manifestations of the nature of relationships attribute within each of the offerings is shown in Table 26 below.

Table 26. The attribute for cooperative norms dimension

		Basic Offering	Product and Service Offering	Advanced Offering
Cooperative Norms	Nature of relationship	Based on transactional exchange	Relational interactions Dealers interact with customers on a daily basis	Two modes: - maintenance related relational exchange AND telematics related integrated relationship

4.4.2.5 Buyer-Seller Adaptations

"Relationship-specific adaptations are investments in adaptations to process, product, or procedures specific to the needs or capabilities of an exchange partner" (Cannon and Perreault, 1999, p. 443). Within this context, respondents were asked questions around the specific adaptations to other network members. However, identifying adaptations specific to the three offerings were not a straightforward process. Firstly, it was difficult to differentiate the reasons behind the adaptations of each organisation in the network. For instance, dealers mainly responded to this question by mentioning their recent investments in their buildings or facilities. However, it was hard to differentiate whether these occurred as a result of the servitized offerings or if they were just internal investments. Secondly, it was difficult to differentiate which offerings caused the implementation of these adaptations. At this point, interviews at the customer organisations helped to understand this dimension better.

At a result of the analysis, *innovation* emerged as the main theme for this dimension (see Table 27). Innovation in this context includes technological

capabilities as well as the ability to design new products and/or services. The customers of TruckCo were not very interested in the incremental investments made by truck manufacturers. In other words, customers were seeking supplier innovations that would affect their bottom line profits. Within the basic offering, adaptations were perceived in terms of product innovation. Therefore, product features such as fuel efficiency or reliability and also the level of customizability were perceived to be important by customers. TruckCo's product and technology capability accommodated these needs. This mainly stemmed from the fact that TruckCo vehicles are premium products that were perceived to be at the top end of the market. Within the product/service offerings, customers were more interested in the process innovation regarding the maintenance service procedures. Therefore, discussions between the customers and the TruckCo network were focused on improving the performance of the maintenance operations. For instance, certain repair activities were tailored to the needs of the customers (e.g. replace vs. repair options). On the other hand, customers of advanced offerings expected something more. They were interested in innovations that truck manufacturers could easily use and benefit from in their business operations. For example a fleet engineer from a customer organisation commented:

> *"I would expect more of them* [i.e. truck manufacturers] *sitting in their control centre producing lots of clever reports to tell me before I tell them, do you realize that driver there has gone backwards…. Because they've got access to everything we've got access to, because they were their vehicles, they know what's happening."* (Fleet engineer, Customer 2)

For advanced offerings, innovation was mentioned from a long-term perspective and at the same time, telematics technology was at the centre of the innovation discussions. A summary of the manifestations of innovation attribute within each of the offerings is shown in Table 27 below.

Table 27. The attribute for buyer-seller adaptation dimension

		Basic Offering	Product and Service Offering	Advanced Offering
BS Adaptation	Innovation	Related to the product specifications	Operational or process innovation	Innovation for customers' business from a long-term relationship perspective

4.4.2.6 Other Emerging Attribute: The range of products and services

Another attribute which emerged from the TruckCo case study is *range of products and services*. This attribute did not fit into any of the five relationship dimensions detailed in the previous sections. This was considered acceptable, given the semi-structured exploratory nature of the interviews. However, at this point, the attribute should not be ignored, given the importance of this to the respondents.

Range emerged as an attribute which did not fit into any of the five relationship dimensions. It refers to the variety of products and services provided to customers. The respondents at TruckCo emphasized the importance of having a wide range of products in their portfolio. Some respondents even went further to discuss how beautiful the looks are of their new truck range. A senior TruckCo manager pointed out the importance of specialist vehicles to their business. These vehicles include fire-trucks or specially powered trucks which can pull large objects such as planes or space rockets. Another special range was that of military vehicles. The product range mainly resonated with customers of the basic offerings. They also saw this as an advantage over TruckCo's rivals since it had many specialist vehicles of different sizes. This was experienced by a respondent at a customer organisation as follows:

> *"*[TruckCo] *has been the only vehicle manufacturer that could supply us with the weight of truck we need…. it's a good selling point for* [TruckCo]. *It's a product*

that we'd stick with. So the comparisons would be very difficult for us to go to other manufacturers." (Managing Director/Owner, Customer 3)

The dealer network on the other hand, also valued the importance of the range of products. However, for them it was important to have multiple brands under their roof. In the UK, this was allowed by the recent block exemption legislation. Some dealers were multiple franchises hosting competitors of TruckCo as well.

In general, the product/service offerings range not only meant products but also included services. However, the range of services was provided by the dealer network. As a result, the service range was dependent upon the individual dealer. The larger dealers were able to offer a diverse range of services including specialist ones such as the tachograph, whereas the smaller dealers did not have the finances to invest in every service. The dealers emphasized the importance of being a "one-stop shop" where customers could just drive in and receive any service they wanted. At the same time, dealers commented that in order to be able to provide all the specialist services a dealer needed to receive support from TruckCo, which seemed unlikely due to the economic downturn. Finally, for the advanced offering, customers were more interested in the range of value added services offered through the utilization of the telematics data. A summary of the manifestations of the range attribute within each of the offerings is shown in Table 28 below.

Table 28. Emergent attribute: range of products and services

	Basic Offering	Product and Service Offering	Advanced Offering
Range	- Provision of vehicles with different sizes and also unique special vehicles are considered to be an advantage. - Some dealers have multiple brands. - Parts business is all about having a cheap range of products.	The notion of “one-stop shop”.	Customers were expecting more innovative value adding services.

4.4.2.7 Concluding findings on the relationship dimensions

Overall, the manifestations of relationship dimensions differed significantly across the three offerings. Nevertheless this difference was by no means radical or disconnected. As the offerings move towards advanced servitized offerings, it was observed that the complexity of the relationship dimensions gradually increased by building on the existent attributes. For instance, the network for the advanced servitized offering comprised the relationships pertaining to the repair and maintenance (i.e. TruckCo, dealers and customers) but on top of that, it also comprised the relationships pertaining to the telematics (i.e. TruckCo, TelCo and customers). In terms of their attributes, the former set of relationships (i.e. TruckCo, dealers and customers) were identical to that of product/service offering, however the advanced offering was driven by the latter set of relationships (i.e. TruckCo, TelCo and customers). Within this understanding, some attributes were more relevant to the particular offering.

For instance, the key and the only activity for basic offering was the transactional communication for the sale of the vehicles between TruckCo and customer that was based on price and product features. Overall, the relationship attributes related to the basic offering were all based on the manufacturer and centred on the product features. Whereas for the product/service offering, a relational interaction was evident that was underpinned by communication, support systems, preventative services, and the nature of the contract. Within this network, communication was observed to be the key activity for service operations. In so doing, the network used a number of support systems to increase the breadth and depth of communication to accommodate the required service orientation. To this end, various online support systems were introduced. In addition, the manufacturer introduced a financial bonus system for dealers, whereby on the condition that the desired service performance is achieved for the customer, the dealers received extra financial benefits. This was seen as an instance of preventative services and was the main driver behind the service performance of the dealer network. Furthermore, the nature of contract was particularly relevant for the product/service offerings. Within this offering, the customer is contracted to pay a fixed amount for an agreed amount of time in exchange for the truck and the associated services. During this time, all the agreed maintenance activities are conducted by TruckCo's dealer network as part of the contract. In the case that extra services were required that are outside the contract, these were conducted at an additional fee for the customer. Therefore, the majority of discussions with the customer were based on the details of the contract. Hence, the nature of the contract was for product/service offerings since it determined the relationship between customer and the TruckCo network. On the whole for the provision of the product/service offering, the focus of the network was not only on TruckCo but the dealers were also equally important. Accordingly, the attributes were mainly based around the service component of the offering.

On the other hand, the relationships pertaining to the advanced offering were far more integrated and driven by communication, knowledge, preventative services, and innovation. The genuine characteristic of the advanced servitized

offering was the inclusion of telematics technology. On top of repair and maintenance related communication, telematics related information was also exchanged in the network of advanced offering. Interestingly the telematics related communications also involved the leaders of the organisations involved. The senior management of TruckCo and customers were interacting on a regular basis to decide how telematics data can be used to add value to their businesses. To this end, the knowledge obtained through telematics allowed TruckCo to create customised driver training programs. These programs can be seen as an instance of preventative services whereby the manufacturer provided services that were aimed at reducing costs for the customer's business. Thus, telematics related knowledge resulted in increased communication channels between customers and TruckCo, and also enabled the creation of preventative services. Furthermore, customers of the advanced offering was expecting TruckCo's network to provide such innovative services in a proactive manner. These customers were looking for innovative ways of value adding services which was termed as the 'extra mile' or 'the icing on the cake'. Therefore innovation was seen as important for the future of these relationships. In all of these capacities, it can be concluded that the focus of network for advanced offering was on the customer and TruckCo's network, and the relationship attributes were mainly focussed on the customer's business.

4.4.3 Outcomes

In the previous two sections, firstly the overview of the case company was explained followed by the description of the three offerings with the resultant structures of the supply network. Next, IORs were analysed by identifying the key attributes underpinning the three offerings. This section, however, aims to identify the relevant key performance measures. In essence, it explicates how the respondents of the study explained the way in which the three offerings impacted on performance. For this section, respondents were asked broad questions about the impact of these offerings. These questions were

intentionally left open-ended since the respondents were allowed to come up with their own understanding of performance. As a result of the analysis, four key attributes emerged. These outcomes can be placed into three categories in line with the conceptual framework of the study. The manifestations of these attributes within each of the offerings are detailed in Table 29.

Table 29. The emerging outcome attributes

		Basic Offering	Product and Service Offering	Advanced Offering
Revenue enhancing	Business Performance	Number of products sold.	Based on trucks sold and maintenance services	"Culture Changing", "More market share", "New business opportunities especially regarding environmental aspects"
Value enhancing benefits	Operational Performance	Quality product Good residual value	Reliability of the product Service consistency across network	Better end-user service levels, better driver performance, better fuel savings
Sustained benefits	Manufacturer Satisfaction	Product satisfaction	Service satisfaction with the network	Business performance satisfaction
	Loyalty	Brand and image loyalty	Mentioned in terms of high service levels provided to customers.	Lock in or tie up the customer into a long-term perspective

For instance, revenue enhancing benefits for the basic offering were assessed by TruckCo on the basis of the number of trucks sold. This was the main determinant of TruckCo's performance for the basic offering. For the product/service offering, business performance was also measured by trucks sold but in addition the maintenance services were also considered for assessing performance. For the advanced offering, the performance was

defined in a different manner, as opposed to the other offerings. Here, the offering was described as creating new business opportunities resulting in increased market share. This was mainly achieved through the utilization of telematics technology. An example of a new business opportunity was the creation of personalised CO_2 emission reports for drivers in the customer organisation. These reports provided a far more detailed CO_2 emissions outlook for customer organisations which in turn provided these customers with the tools to demonstrate their carbon footprint to their end-customers. In the light of this, revenue enhancing benefits which are defined as the outcomes related to economic and financial benefits of servitization were described in terms of *business performance* for the three offerings.

For value enhancing benefits, (i.e. the benefits which directly or indirectly affect revenues by satisfying customer needs) the results again showed different manifestations for each offering (see Table 29). These manifestations were best described in terms of *operational performance*. For instance, the basic offering was judged purely on the basis of product and whether the product had good residual value. For the product/service offering, in addition to product quality, there was also emphasis on the consistency of service across the network. To this end, in addition to service levels, the operational performance for the advanced offering was perceived as better driver performance and better fuel consumption. Thus, the operational performance for this offering was based on achieving operational benefits for customers.

Finally, for sustained benefits (i.e. the long-term benefits that are both revenue and value enhancing), there were two primary dimensions: *manufacturer satisfaction* and *loyalty*. For the basic offering, the former meant product satisfaction and accordingly, the latter was perceived in terms of brand and image loyalty. It has been reported in the interviews with the customers of the basic offering that few defined the truck as ‘the most beautiful thing’ or ‘the most attractive vehicle ever designed’. These customers were mainly owner-drivers who were loyal to the brand due to what it symbolises through its image. On the other hand, for the product/service offering manufacturer satisfaction was

mainly underlined by the satisfaction with service operations performed by the dealers. Here, loyalty was based on providing high levels of service to the customer. It is interesting to note that brand or image related symbols were not mentioned by the customers of product/service offerings. For the advanced offering, manufacturer satisfaction was perceived in terms of the business performance delivered for the customer, whereas loyalty was achieved by locking in the customer into a long-term perspective. Importantly, this relationship was based on a win-win mentality amongst network members and was not confined by the longevity of contracts.

In conclusion, there are a number of consistent patterns amongst the findings. Firstly, for the basic offering, all the emergent performance attributes were related to the product and manufacturer. For instance, satisfaction with manufacturers was solely based on the product for this offering. In addition, loyalty was related to the features of the product in terms of its image and brand perception. Again, for the business performance, product was the main focus and performance was measured in terms of trucks sold by TruckCo. Secondly, for the product/service offering, performance was conceived as an amalgam of both product and service. However, within this offering, in addition to TruckCo's performance the network's performance was also equally important. Therefore, the overall performance discussion was around TruckCo and its network of dealers. For instance, operational performance was perceived in terms of both product reliability and service consistency across the network. Thirdly, for the advanced offering, performance was perceived as the customer's performance. In other words for these offerings, performance discussions were related to customers' business. For instance, some customers perceived these offerings as 'culture changing' or 'new business enablers'. For the customers, these offerings allowed the real-time monitoring of trucks which then enabled them to change their drivers' behaviour or their organisational carbon footprint. Next, the linkages between the three areas of inquiry (i.e. offerings (RQ1), network structure (RQ2) and relationships (RQ3)) are discussed.

4.5 Linkages between the offerings, network structure and relationships

This section is predominantly focused on addressing *Research Question 4 (What are the linkages between the offerings, inter-organisational network structure and relationship attributes?).* A broad overview of these linkages is demonstrated in Table 30.

Table 30. The offerings and the resultant network structure and relationships

Types of Offerings	Network Structure	Inter-organisational Relationships	
		Focus	**Key Attributes**
Product	Dyad	Transactional interaction centred around the manufacturer based on price and product features	Communication
Product & Service	Triad	Relational interaction centred around the supplier network	Communication, support systems, preventative services, nature of contract
Advanced	Tetrad	Integrated relationship centred around the customer	Communication, knowledge, preventative services, , innovation
Note: These findings are discussed in Chapter 4.3		*These findings are discussed in Chapter 4.4. Also see Chapter4.4.2.7 for key attributes.*	

4.5.1 Understanding the basic offering and resultant dyadic network structure and relationships

This offering was essentially a product-based and traditional value proposition based on the sale of the truck. It accounted for 40% of trucks sold by TruckCo. The customers of this offering were generally small to medium sized organisations (i.e. retail customers). The truck price was the order winner for these customers. The customers tended to acquire maintenance either from third parties or through in-house maintenance capabilities. They generally

showed no interest in using telematics technology for improved driver performance and truck utilization. It was further claimed by interviewees at TruckCo that these customers only have a short-term vision and lack of knowledge in understanding the financial benefits of servitized offerings. This was further supported when the customers of these offerings were interviewed. In turn, it was difficult for the TruckCo sales force to argue the value potential of servitized offerings persuasively with these customers. With small customer organisations, it is also argued that purchasing, as a function, has a low status or leverage demonstrating a lack of focus in servitized offerings based on long-term relationships.

In terms of the network structure, the basic offering had a *dyadic network* based on a transactional approach with TruckCo and customers. The relationship was predominantly focused on price and product features. Thus, the manufacturer was at the centre of the discussions while the customer's requirements were rarely explored or understood. In turn, TruckCo only had a very limited knowledge of the customer's operations. The communication amongst the network for this offering was mainly around product features, price and warranty details. A summary for the basic offering is provided in Table 31 below.

Table 31. Customer imperatives, network structure and relationship focus for the basic offering

Customer Imperatives	Network Structure	Relationship Focus
	Dyadic Structure	
• Accounts for 40% of trucks sold • Mainly purchased by retail customers • Price is order winner • Short-term vision of retail customers • Tendency to acquire maintenance contracts from third parties • Lack of knowledge in understanding financial aspects • Limited collaboration with provider • Difficult to demonstrate value potential persuasively • Purchasing function has low status and low leverage	*TruckCo-Customer* • Relationship only exists with TruckCo • Relationship only exists during negotiation process • Relationship is transactional *Customer-Dealer* • Entirely dependent on customer's individual demand	• Focused on price and product features • Mainly centered on the manufacturer • Information exchanged based on truck and price • Limited knowledge of customer's operations and needs • Product support • Warranty contracts • Product range
Note: These findings are discussed in Chapter 4.3		*These findings are discussed in Chapter 4.4.*

4.5.2 Understanding the Product/Service Offering and the resultant triadic network structure and relationships

This offering accounted for 50% of the total sales of TruckCo. The customers of this offering were mainly medium to large sized organisations interested in the service part of the contract as much as the price and features of the truck. The main driver behind the decision of acquiring this offering lies with the need for or strategy of customers in choosing to focus on their core business and outsourcing the maintenance services. In other words, the customers of this offering either perceived the service component as a peripheral issue to their competitive advantage or they simply believed TruckCo with its dealer network is better suited to manage these services.

This offering showed a triadic network configuration formed of three main actors i.e. TruckCo, customers and dealers being the new actor in the network. The contracts are established and formalized between TruckCo and the customers. However, the dealers carried out the services for customers which resulted in daily interaction and collaboration. In turn, this relationship became fundamental to the success of the contract. Even so the performance of the dealers could potentially become the reason for winning or losing further contracts for TruckCo. Thus, the focus of the relationship was mainly on service attributes. The discussions spanning the relationships were mainly concerned with dealers' performance in terms of the services performed. The information or knowledge exchange was predominantly around the service procedures in terms of performance related feedback. A summary for the product/service offering is provided Table 32 below.

Table 32. Customer imperatives, network structure and relationship focus for the product/service offering

Customer Imperatives	Network Structure	Relationship Focus
	Triadic Structure	
• Accounts for 50% of trucks sold • Purchased by medium to large sized fleet operators • Truck and service packages are sold by TruckCo and then service is done by dealers • Customers consider the service part of the business during purchase • Customers prefer to focus on their core competence and pay TruckCo to deal with repair and maintenance	*TruckCo-Customer* • Relationship is formally established between TruckCo and customer • Generally three-year relationship *Customer-Dealer* • This relationship is central to the success of contract • Continuous interaction during after-sales *Dealer-TruckCo* • Relationships are highly formalized and long-term oriented	• Product and service oriented with a particular focus on the service attributes • Centred mainly on the TruckCo network • Info. exchanged based on service, feedback • Service support • Dealer performance measures • Contracts • One-stop shop
Note: These findings are discussed in Chapter 4.3		*These findings are discussed in Chapter 4.4.*

4.5.3 Understanding the advanced offering and the resultant tetradic network structure and relationships

This offering accounted for 10% of the total sales by TruckCo. It was mainly purchased by large fleet owners which have experienced purchasing functions or buying centres. The customers of this offering could be characterized as skilled and knowledgeable logistics operators. The customers were interested in long-term benefits through innovation. This was achieved or enabled by telematics technology in the case company. The added value for customers was achieved through reduced fuel consumption, customized training programmes and lowered CO_2 emissions. The customers of this offering were able to access new information and know-how previously unavailable to them. Interestingly, within the advanced offering, knowledge was co-created for the customers with the network but for the other offerings knowledge was only exchanged within the network.

This offering showed a tetradic network configuration consisting of four actors: TruckCo, customers, dealers and TelCo being the new actor in the network. The network predominantly consisted of two functions: maintenance related services with dealers and telematics related services with TelCo. TruckCo's partnership with TelCo enabled the inclusion and interpretation of telematics data for the use of customers. Despite the complexity of the network, its full potential was still not realised. The relationship between TelCo and dealers was non-existent, limiting the possibility of further knowledge co-creation through the integration of maintenance and telematics data. The relationships within this offering were mainly geared towards providing added value to customers through innovative services. This was mainly achieved via collaborative work partnerships based on informal and non-contract based interactions with customers and the TruckCo-TelCo partnership. A summary for the advanced offering is provided in Table 33 below.

Table 33. Customer imperatives, network structure and relationship focus for the advanced offerings

Customer Imperatives	Network Structure	Relationship Focus
	Tetradic Structure	
• Accounts for 10% of trucks sold • Purchased by large fleet customers • Established and effective collaboration with provider • Experienced buying centre open to new ideas and value creation • Long-term focus in selection of providers • Customers are interested in innovative ways of adding value to their business. • Customers are mainly very skilled knowledgeable logistics operators • Price is order qualifier	*TruckCo-Customer* • Long-term partnership-like relationship *Customer-Dealer* • This relationship is important but not central to the success of the contract • Continuous interaction during after-sales *Dealer-TruckCo* • Relationships are long-term oriented *TruckCo-TelCo* • A well-established, collaborative relationship • TruckCo and TelCo co-develop the software that supports the fleet management package *TelCo-Customer* • No formal relationship • Customer's usage data is sent to TelCo *TelCo-Dealer* • No relationship	• Focused on providing added value to customer • Customer centred mindset • Extensive info. is exchanged based on telematics usage data, reports • Business support • Telematics • Not very contract based • Collaborative work partnerships • Innovative value-adding services
Note: These findings are discussed in Chapter 4.3		*These findings are discussed in Chapter 4.4.*

4.6 Summary of the Findings Chapter

This chapter served as the presentation of the results of the case study. In conclusion, one of the most notable findings of the study is that the customers' demand shaped the type of offerings which in turn defined the configuration of the network. In other words, customers – to a great extent – determined the structure and relational dynamic of the network. For instance, in TruckCo's industry, customers did not demand results-based offerings therefore there were no visible configurations for these types of offering. Within this context, it is observed that different offerings have different structures and different relationship attributes. In particular, the advanced offering had the most complex structure with the most network members involved in the network (i.e. TruckCo, customers, TelCo and dealers) whereas the basic offering had the

least complex one (i.e. a transactional relationship between TruckCo and customers). IORs differed significantly across the three offerings. However, the basic offering differed most when compared to the other two offerings. The relationship attributes related to the basic offering were all based on the manufacturer and centred on the product features. On the other hand for the product/service offering, the focus was not only on TruckCo but the dealer network was also equally important for the provision of the offering. At the same time, the attributes were mainly based around the service component of the offering. However, the advanced offering was based on customers' business. For instance, the support attribute meant product support for the basic offering, service (i.e. maintenance) support for the product/service offering and business support for the advanced offering. As part of the summary, overviews of the findings are provided in the Table 34 and Table 35 below.

Table 34. The linkages between the offerings, the contingencies and the relationship dimensions

Types of Offerings	RELATIONSHIP ATTRIBUTES						
	Presence of Contingencies		Presence of Relationship Dimensions				
	Long-term Relationships	Service Orientation	Information Exchange	Operational Linkages	Legal Bonds	Cooperative Norms	Buyer-seller Adaptations
Product	Transactional	Product customization	Sales person level, truck cost	Product support	Warranty related	Transactional exchange	Product specific innovations
Product & Service	Relationships with dealers	Service related customer focus	KAM level, service knowledge	Service support	Detailed contract	Relational exchange	Operational or process innovation
Advanced	Value driven partnerships	Driven by customer's business needs	Leadership level, business knowledge mediated by technology	Business support	Collaborative work partnership	Relational + Integrated	Innovation for customer's business

Table 35. The linkages between the offerings, network structure and the relationship outcomes

Types of Offerings	Network Structure	Outcomes		
		Revenue Enhancing	**Value Enhancing**	**Sustained Benefits**
Product	Dyad	Number of products sold	Good product Good residual value	Product Satisfaction, Brand and image loyalty
Product / Service	Triad	Based on trucks sold and maintenance services	Reliability of the product Consistency of service across the network	Service satisfaction with the network Mentioned in terms of high service levels provided to customers
Advanced	Tetrad	"Culture Changing", "More market share", "New business opportunities especially regarding environmental aspects"	Better end-user service levels, better driver performance, better fuel savings	Business performance satisfaction Lock in or tie up the customer in a long-term perspective

5 DISCUSSION

One thing is certain: whatever organization you might construct, whatever the industry, whatever the competitive playing field, the organization would be built on relationships.

Gulati and Kletter (2005, p. 77)

Supply network is the Achilles heel for any organisation that provides servitization.

Senior Executive, TruckCo

5.1 Overview of the Chapter

The aim of this chapter is to discuss the findings with respect to the extant literature. In particular, this chapter serves as a synthesis of literature and the emerging findings in order to draw sensible conclusions or warranted assertions – as in the language of pragmatism. Accordingly, the discussion of the findings with respect to the extant literature will provide the foundations for the contributions to be identified. The structure of the chapter is thus aimed at achieving these in a clear and succinct manner. As illustrated in Figure 14, the structure of the discussion chapter reflects the conceptual framework and thus the research objective and questions.

Firstly, in Chapter 5.2, a discussion of the literature related to the offerings is presented. This is achieved through an initial positioning within the servitization literature followed by the particular properties of the nature of offerings. In addition, the manifestations of the customer roles and imperatives within each offering are detailed. Secondly, in Chapter 5.3, the structures of the networks pertaining to product and servitized offerings are discussed in relation to the extant literature. To this end, it is highlighted that this is the first known study to uncover a triadic as well as a tetradic network structure in a servitization context. Thirdly, in Chapter 5.4, the relationship attributes are detailed. In so doing, the manifestations of relationship attributes in the context of the TruckCo case study are critically discussed with reference to the literature. These are

emerging attributes that need to be managed in order to drive the right behaviour for the provision of each of these offerings. Due to the exploratory nature of the study, it was necessary to revisit the literature in light of the emergent findings. This is considered a part of the abductive research approach. Next, in Chapter 5.5, the conceptual framework is modified to incorporate the emerging conclusions of the study. This framework provides the foundations to capture the interplay between the different offerings and the resultant network structure and relationship attributes. Finally, in Chapter 5.6, a summary of the chapter is provided.

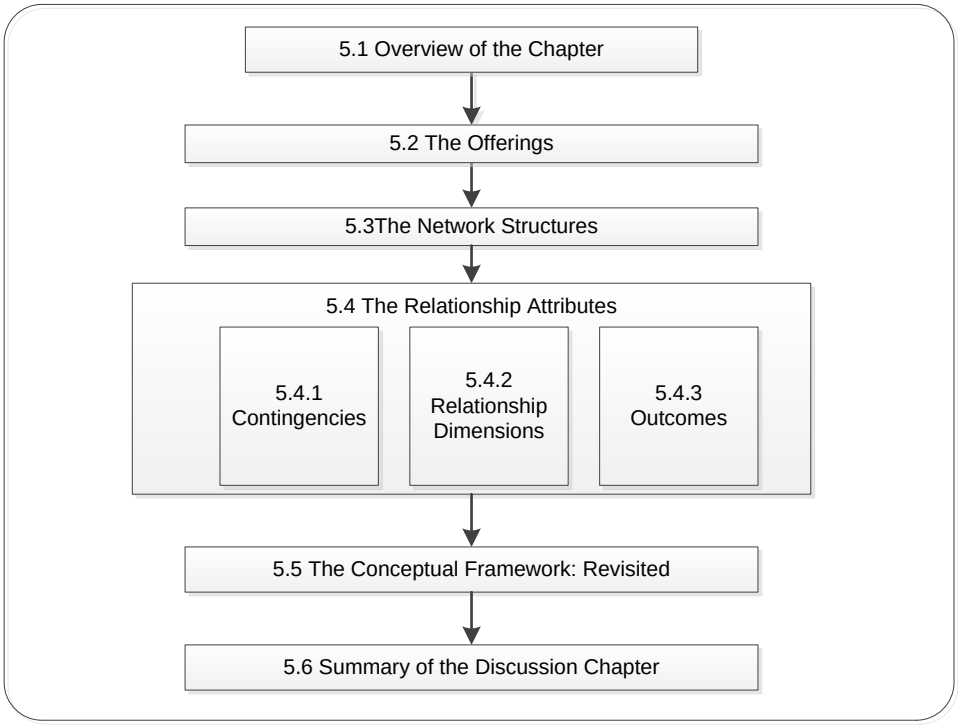


Figure 14. The structure of the Discussion Chapter

5.2 The Offerings

This section is largely focused on discussing *Research Question 1 (What are the different types of products and servitized offerings provided by a*

manufacturer and what customer imperatives do they need?). Thus, it juxtaposes the emergent research findings and the extant literature to provide further assertions to uncover some of the complexities surrounding the offering and related customer imperatives.

Apart from traditional product offerings, scholars generally classify servitized offerings into three categories (cf. Tukker, 2004). These are: 1) product-based offerings, 2) use-based offerings, and 3) results-based offerings. In the case of TruckCo, the basic offering which accounts for 40% of sales is a traditional product offering; the product/service offering which accounted for 50% of the sales can be classed as a product-based offering; the advanced offering which accounted for 10% of the total sales can be classed as a use-based offering. Nevertheless, there was no evidence of result-based offerings in TruckCo's industry. Interestingly, only a small percentage of customers (i.e. 10%) were buying the advanced offering. This was despite the fact that TruckCo, amongst its competitors, was one of the leading truck manufacturers to provide such servitized offerings in its industry. Thus, it can be argued that a significant percentage of customers are driven by a short-term, product-centric orientation in the trucking industry. This suggests that there is not a wholesale migration towards services, but that goods and services can be sold in parallel. This is in stark contrast to a number of studies which conceptualise servitization as a radical transformation (Brax, 2005; Edvardsson et al., 2008; Oliva and Kallenberg, 2003). The study provides ample evidence that the changes towards servitization happen in a gradual or incremental manner. In the case of TruckCo, the company extended their value propositions to include firstly basic and later advanced servitized offerings. But while the company and its network provided these offerings, they have not moved away from product-based traditional offerings. Thus, the change towards servitization is anything but radical. It was best described by a respondent from TruckCo as "an evolution rather than a revolution". This is also evident from the fact that as long as the customers demand traditional product offerings, manufacturers will continue to provide them in parallel with the servitized offerings. This then leads to the next

area of interest for this research which was to understand the customer imperatives for product and servitized offerings.

The extant servitization literature argues that understanding the customer perspective is fundamental for the provision of servitized offerings (Tuli et al., 2007; Vargo and Lusch, 2004). Thus, manufacturers need to first understand customers' requirements and related contextual drivers in order to effectively deliver these offerings (Kowalkowski, 2011; Macdonald et al., 2011). In particular, manufacturers need to understand the key stakeholders in the customer organisations (Kowalkowski, 2011) and accordingly attend to their needs in an efficient manner. These key stakeholders for customer organisations can be classed as buyers, payers and users from the extant literature (Michel et al., 2008; Sheth and Mittal, 2004). In the light of this, the findings provided insights into the way in which these different stakeholders have a role in the acquisition and management of the offerings.

In general, the case study highlights the significance of the customer roles of user, payer and buyer, especially for the product/service and advanced offerings. Michel et al. (2008) argue that, depending on the context, the three customer roles could be performed by only one department or through three different departments within one organisation. In addition, it is argued that users are mainly interested in the value derived through usage and the payers are interested in the value derived through exchange whereas the buyers act as a bridge between these two roles (Michel et al., 2008). To put it simply, for instance in a large logistics company a driver of a truck, who is the user, is interested in the features of the truck and its driveability but the finance manager, who is the payer of the truck, is interested in its unit price. However, the fleet engineer, who is the buyer, evaluates the available options by considering both perspectives in the decision making process. Thus, the buying centre for large organisations consists of separate users, buyers and payers. This setting was clearly evident in the case of TruckCo and an interesting picture emerged as different customer roles were investigated with respect to the three offerings. In addition, the extant literature provides a number of factors

which can be broadly considered as customer imperatives that must be considered for the provision of servitized offerings. Next, these are discussed along with the customer roles. Table 36 illustrates these three offerings with respect to the customer imperatives synthesized from the extant literature (cf. Kindstrom, 2009; Kowalkowski, 2011; Michel et al., 2008; Sheth and Mittal, 2004; Tuli et al., 2007).

Table 36. The customer imperatives for three offerings identified in the case study

Types of Offering	Customer Imperatives									
	Short-term outlook	Longer-term outlook	Willingness to collaborate	Experienced buying centre	Unit price driven	Service driven	Value driven	Adaptiveness	Operational Counselling	Political Counselling
Product Offering	√				√					
Product & Service Offering		√	√	√		√		√	√	
Advanced Offering		√	√	√			√	√	√	√

The customers of product offerings were mainly retail customers who were predominantly owner-drivers. For these customers, the role of buyer, payer and user were performed by the same person (i.e. the owner-drivers). Most notably, these customers were mainly driven by unit price and product features.

In addition, they were not interested in a long-term outlook to engage in a more relational interaction with TruckCo. This is in line with Kowalkowski (2011) who describes the customers of product-based offerings in a similar vein. Accordingly, as the size of the customer organisation increases, roles are separated around different departments. Again in line with Kowalkowski (2011), the evidence suggests that where the roles are performed by one person, there is a tendency to emphasize value derived through exchange rather than value derived through use. In other words, when three roles are performed by one person, I observed that the payer role is dominant in terms of emphasizing unit price over the rest. I suggest this is due to the different abilities and motivations of the parties. This is line with the notion that the customer's ability to assess longer-term benefits of offerings is dependent on the level of its purchasing competence (Kowalkowski, 2011).To this end, an after-sales director pointed out that the benefits of servitized offerings can be easily explained to an *'open-minded'* customer whereas some *'short-sighted customers will only look at the last line of a 30 page quote which shows the price'*.

In fact, large customers were considered as the primary targets by TruckCo management. They are said to *'share destiny'* and *'partnerships are the future'* for the large customers. Yet, the retail customers comprised 70% of the total customer base of TruckCo which also reflected the average percentage of retail customers in the trucking industry. To this end, the literature emphasizes the fundamental importance of getting the right message to the right customers in the context of servitization (Raja et al., 2013). Nevertheless, it is observed that TruckCo, together with its network, was finding it hard to understand the reasons behind small customers' demands for product offerings. However, contrary to the claims of the manufacturer, this was not solely an issue depending on the small size of such customers but TruckCo's approach

towards these customers was also problematic. Interestingly, this was mainly a result of senior management's reluctance to deal with small customers. This is best documented with the words of a senior executive who argues; "I wouldn't want to deal with an owner-driver. I tell you, they are more trouble. You need somebody with some financial backing, understanding the financial side of the business". Within this aspect, interviews with the owner-drivers also provided further evidence that TruckCo sales force was unable to demonstrate the benefits offered by servitization. This could be attributed to a lack of skills and tools on the part of the sales force. Thus, this provides further evidence for the need to understand customers' needs and to attend to them accordingly (Raja et al., 2013). In fact, Kowalkowski (2011) explicitly points out that manufacturers need to acquire the reasons behind a customer's decision in order to persuade them to change their focus.

On the other hand, there were overarching differences between product-based and servitized offerings. Firstly, the customers of servitized offerings were predominantly medium to large organisations which had national or international fleets. For such customers, the three customer roles (i.e. buyer, payer and user roles) were generally performed by three different departments. For these customers, the buyer roles (i.e. fleet engineers or purchasing managers) were more influential than the user and payer roles in the buying decisions. Interestingly the extant literature is split into two assertions for this topic. On the one side, Kowalkowski (2011) and Michel et al. (2008) assert that users have the influential role in buying decisions for servitized offerings thus contradicting the findings of this study. Whereas on the other side, Kindstrom (2009) and Nordin (2006) argue that the role of users in the buying decision for servitized offerings is not significant. The findings of this study comply with the latter assertions and provide evidence that the role of the buyer is the key for servitized offerings. However, when these extant studies are closely investigated it can be seen that Kowalkowski (2011) and Michel et al. (2008) are mainly concerned with the business-to-consumer context whereas the Kindstrom (2009) and Nordin (2006) studies were conducted in business-to-business contexts. In fact, Nordin (2006) argues that users are mainly confined

within day-to-day operational activities and therefore generally not able to comprehend the basis for the long-term strategic focus of the servitized offerings. As a result, for buying decisions, it could be asserted that the buyer role is the most influential role in business-to-business contexts, whereas the extant literature argues in business-to-consumer contexts that the user role is significant.

On a further note, the extant literature has long argued that it is more likely for the customer organisation to engage in a long-term and collaborative relationship with the provider when the exchanged resource is highly critical to the customer's operations (Kraljic, 1983). To this end, this study provides supporting evidence. For all of the customers that engaged in long-term relationships with TruckCo as part of servitized offerings, the truck was central to their operations. This was especially evident for advanced offerings where all of the customers were large-scale third party logistics providers. Thus, it could be asserted that when the exchanged product is not central to or critical for customers, it is particularly difficult for manufacturers to engage them into servitized offerings based on long-term relationships (van Weele, 2004). Accordingly, the customers of servitized offerings generally had experienced buying centres that were open to new ideas and willing to collaborate in a long-term perspective with TruckCo (Kowalkowski, 2011). In addition, the study showed that the customers of each offering differed in such a way that product offering customers were driven by unit price, product/service offering customers by service and advanced offering customers by value. In other words, the customers of the three offerings had different priorities in terms of price, service and total value. This was in line with earlier conceptualisations (Kowalkowski, 2011; Michel et al., 2008).

As discussed in Chapter 2.2.1.4 (Understanding the customer perspective), Tuli et al. (2007) provide further factors within which the customers of servitized offerings can be characterized. These are customer adaptiveness, operational and political counselling. Whereas Kowalkowski's (2011) conceptualisation provides the foundations to understand the rationale and context behind the

decision to purchase servitized offerings, Tuli et al.'s (2007) factors allow us to understand the customer perspective during the provision of the offering. In other words Tuli et al.'s (2007) factors are related to the post-purchase stage. To this end, product offerings did not provide any evidence for these factors. However, there was a mixed picture emerging for the servitized offerings. Customers of the product/service offering were observed to be willing to adapt their operational processes and routines in accordance with the maintenance and repair services provided by TruckCo network. Nevertheless, this adaptiveness, as well as the operational counselling provided to the network, was only confined within service operations and strictly based on the contract. On the other hand, customers of the advanced offering were observed to take a further step to adapt not only their service procedures but also their business models according to the telematics technology provided by TruckCo. Additionally, these customers provided further information to TruckCo related to the political landscape within their organisation. For example, when a customer organisation faced an environmental initiative from its own corporate headquarters, TruckCo helped this customer by providing customized daily telematics reports that emphasized carbon emissions and also provided specialised training courses for their drivers. Thus, it can be asserted that there are varying degrees of customer adaptiveness, operational and political counselling amongst servitized offerings (Tuli et al., 2007) and the advanced offerings utilize these factors in a more effective manner.

Next, the emerging network structures for the three offerings are discussed in the light of the extant literature.

5.3 The Network Structures

This part of the discussion focuses on *Research Question 2 (What are the inter-organisational network structures required to deliver the different types of product and servitized offerings?).* Previous studies within a servitization context have a tendency to only examine a dyadic structure (Lockett et al., 2011; Martinez et al., 2010). This study advances our understanding by exploring the different interdependencies that exist between actors within different network structures. In doing so, I identified dyadic, triadic and tetradic network structures for the product and servitized offerings. These are discussed in turn.

The product offering in the case study comprised a dyadic structure with a transactional relationship based on the exchange of products. No visible evidence for inter-firm adaptations was observed in relation to the basic offerings. As underlined by the IOR literature, this lack of adaptations indicates an adversarial relationship based on transactional exchange (Woo and Ennew, 2004), whereas the presence of adaptations indicates the existence of ongoing business relationships (Holma, 2008). Thus, the product offering, as expected, was delivered through a dyadic transactional relationship. The inter-firm adaptations were only evident for both of the servitized offerings.

The product/service offering had a triadic network structure consisting of a customer, manufacturer and supplier (dealer). Thus this study revealed a three-tier triad (cf. Holma, 2009) as opposed to a two-tier triad (cf. Dubois and Frederiksson, 2008; Wu and Choi, 2005). In addition, the structure has characteristics of a transitive triad (cf. Havila, 1996) which is a term used for triads that perform as a group. In other words, all the organisations in the triad are connected, thus there are no structural holes (Burt, 1992; Choi and Wu, 2009b). In line with Gentry (1996) who found a positive influence of the involvement of third parties in partnership formation, the results of the case study show that there is a considerable increase in collaboration between manufacturer and customer due to the presence of on-going direct linkages between customer and dealers. Interestingly though, despite the fact that the

relationship is established between manufacturer and customer, the dealers' relationship with customers was at times stronger than the relationship the manufacturer had. This was indicated by evidence obtained from both dealer and customer organisations during the course of the study. The main reason behind that assertion is that dealers were best suited to understand customers' needs since they interacted with customers on daily basis as part of the service delivery. Some customers even commented that the dealer network is the most important determinant for their buying decisions since service is of paramount importance to their operations. Thus, the relationship dealers had with the customers acted as the main determinant for the success of the current contracts and in addition, it acted as a key to securing potential future contracts. This is a strong indication of the concept of indirect reciprocity in a triadic structure (Caplow, 1956) where the relationship between two actors indirectly affects other linkages in the network. Related to this, in some cases, I observed a coalition formation between dealers and customers with respect to service contracts. Caplow (1968) contends that in any group of three there is a tendency among its members to develop a coalition, resulting in the destruction of the triad and the formation of a new dyad. Throughout the case study, this was a rare observation which only occurred on occasions when the manufacturer was unable or unwilling to meet the demands of the customer, and as a result the respective dealer stepped in to offer an acceptable contract for the customer. It is important to note that these contracts were only based on service and did not include a new product. To this end, I concur with Simmel's (1908) assertion that triadic network structures have a higher degree of relationship instability as opposed to dyads. In other words, this means that they are subject to more changes due to their unstable nature compared to dyads. This is seen as a result of the emerging complexity through the involvement of the third actor in the network.

On a further note, the literature on triads has historically (see Chapter 2.3.3) been divided into pure manufacturing (i.e. Choi et al., 2002; Dubois and Fredriksson, 2008; Philips et al., 1998; Rossetti and Choi, 2008) or service contexts (Holma, 2009; Li and Choi, 2009). This is the first known study to

investigate a three-tier triad in a servitization context. Previously, Bastl et al. (2012) investigated a two-tier triad (i.e. one manufacturer and two of its suppliers) in a servitization context.

The advanced offering had a tetradic network structure involving four different actors; customer, manufacturer (TruckCo), suppliers (dealers) and technology partner (TelCo). When the tetradic network structure is closely investigated, it can be seen that the structure actually functioned within two distinct triads. On the one side, manufacturer, customer and dealers interacted for the provision of maintenance services and on the other manufacturer, customer and technology partner interacted for the provision of telematics services. Although these two services were parts of the servitized offering, there were no evident linkages between the maintenance and telematics operations. In terms of the structure, this created a structural hole (cf. Burt, 1992) between the technology partner and the dealer network. Establishing those linkages could create resources that would enable the manufacturer to effectively utilize the full potential of the tetradic network structure. Interestingly, this was the only emerging network structure to have a partner organisation – thus a horizontal relationship. Gulati and Kletter's (2005) is one of the few known studies that investigate horizontal relationships (which they refer to as alliances) in the context of servitization[11]. In so doing, they conducted a survey of FTSE 1000 companies to investigate their IORs. Their study concludes:

> The vast majority of the firms […] universally placed a high magnitude of importance in entering and carefully managing their strategic alliances. For example, seventy percent of firms were experiencing increasing linkages to their partners and furthermore, partners were increasing their input into the development of products and/or services in sixty-three percent of the companies (Gulati and Kletter, 2005, p. 93).

[11] Gulati and Kletter (2005) provide a number of examples demonstrating the move towards solutions and one of these industry examples is in the trucking industry. To this end, they describe the way in which different value propositions are perceived by customers. For the traditional value proposition it is described as 'manufacturers selling trucks' whereas for servitized offerings, the value proposition is that the 'manufacturer can help customers reduce their life cycle transportation costs'.

In particular they argue that as the offerings move towards solutions, the relationship with the partners forms "[…] an intricate and interdependent relationship laden with trust and encompassing critical tasks…" (Gulati and Kletter, 2005, p. 95). In addition, they posit that these relationships result in resources which could not be achieved by the firms alone. To a great extent, the findings of this case study are aligned with the contentions of Gulati and Kletter (2005). In particular, the findings abide by the general contention of Gulati and Kletter (2005) that as offerings move towards servitization all structures in the network shift towards partnerships based on integrated relationships. Thus, I argue that in the context of servitization, as the firms provide advanced servitized offerings, the structure of the network evolves into a horizontal or flat structure. Within this structure, manufacturers move away from transactional relationships. Instead partnerships are established with customers, suppliers and alliances in order to share resources to create value propositions which were not previously available to the network members.

Nevertheless, this horizontal network structure within the TruckCo network was arguably far from perfect, and there seemed to be plenty of room for improvement. Throughout the case study, I observed certain differences between the relationships of TruckCo with customers as opposed to those with suppliers. The analysis revealed that there was an emerging paradox between the intentions and behaviours of TruckCo. Although the senior management at TruckCo viewed the integration of customers and suppliers as an essential antecedent for the provision of servitization, they were reluctant to engage in partnerships with suppliers. In essence, this stemmed from the contradictory behaviour on the part of TruckCo in two different settings: 1) with the customers where they are the sellers, they demanded increased access to customers' resources and more integrated relationships in order to better respond to their needs and requirements; 2) when they are the buyers, they were reluctant to grant similar access to their suppliers for fear of opportunistic behaviour and the resultant loss of intellectual property. In fact, Oliver (1990) argues that the desire to control and reluctance to relinquish control reflects the asymmetric motives of firms within a network. Thus, in terms of engaging in partnership, I

observed an evident relationship bias of TruckCo whereby the partnerships with customers were viewed as much more central, as opposed to the partnerships with suppliers which were viewed as a peripheral issue. This asymmetric relationship structure was equally applicable to all of the offerings studied.

On a further note, Windahl and Lakemond (2006), as part of their study to find the implications of network relationships on servitization, investigated two different integrated solutions projects in which they found that the position of the firm within the network is significantly important for the provision of the offering. In particular, they showed that a manufacturer can have different roles for the provision of servitized offerings and these depended on the position of the manufacturer within the network – whether as a supplier or an integrator. Thus within the context of this study, it is important to point out the role of the manufacturer within each emergent structure. The results show that for the product offering the manufacturer was the focal firm that was solely responsible for the provision of the value proposition – which was simply the truck. For the product/service offering, the manufacturer acted as the integrator of resources (i.e. truck and maintenance services). However, the focal firms in this structure are the supplier (dealer) networks which are responsible for the delivery of service. It could even be argued that the success of the contract was significantly dependent on the performance of the dealers since they continuously interact with the customers to provide maintenance services. For the advanced offering, it could be argued that again the manufacturer acts as an integrator but it is also the focus of the network together with the customer. Here, in addition to maintenance services, the manufacturer is also responsible for integrating the resources created through the telematics services into the value proposition. Thus, it can be concluded that moving towards servitized offerings not only changes the structure but also changes the focus of that network closer to the customer.

In conclusion, the discussion of the findings in relation to the network structure presented further evidence towards understanding some of the complexities surrounding the implications of servitization on the network. It showed that the

product offerings had a dyadic structure whereas product/service offerings had a triadic structure and the advanced offerings had a tetradic network structure. The advanced offering had the most complex structure with four different actors in the network. The inclusion of a fourth organisation in the network dramatically enhanced the relationship manufacturer had with the customer. Nevertheless, none of the offerings utilized the full potential of the network. Even for the advanced offering there was an emerging structural hole between the technology partner and dealer network. The following chapter focuses on the next area of inquiry which is relationship attributes.

5.4 The Relationship Attributes

This chapter is focused on discussing the emergent findings and related extant literature for the *Research Question 3 (What relationship attributes support the delivery of the different types of product and servitized offerings?).* In line with the conceptual framework, it entails three main areas of inquiry. These are primarily aimed at uncovering the attributes for the contingencies, relationship dimensions and outcomes which are discussed in detail throughout this chapter.

On the whole, as discussed in Chapter 2.2.4 (i.e. the role of IORs for the provision of servitized offerings) as part of the literature review, there is only a handful of research empirically investigating the implications of servitization on the network (Bastl et al., 2012; Lockett et al., 2011; Windahl and Lakemond, 2006). Nevertheless, the majority of these studies fall short in providing a coherent list of relationship attributes in the context of servitization. Thus, their findings are contested with various organisational variables. For instance, Windahl and Lakemond (2006) identified an impact on existing internal activities whereas Lockett et al. (2011) identified planned business developments as key attributes for relationships. I acknowledge the importance of these attributes for the provision of servitization; however, these are not attributes for IORs but rather they are attributes pertaining to the organisation alone. This stems from the fact that a comprehensive relationship framework was not used in these studies (e.g. Johnsen et al., 2009; Lockett et al., 2011; Windahl and Lakemond,

2006). An exception is the study of Bastl et al. (2012) where Cannon and Perreault's (1999) relationship framework was used. Even so, their study explicitly focuses on the relationship attributes and does not include other contextual factors which are shown to be crucial for the provision of servitized offerings. It has long been argued that understanding the contextual limitations is an essential part of the research design (Pettigrew, 1997). This is especially true for supply chains since they are inseparably context-specific (Christopher, 2011). This understanding is also in line with pragmatism where the conditions, assumptions and contexts are always a part of conclusions drawn from the study. With these in mind, the relationship attributes are extended to include the contingent factors as well as factors related to the outcomes of relationships. Thus, the use of Cannon and Perreault's (1999) framework for relationship dimensions provided a coherent list of attributes, whereas the inclusion of contingencies and outcomes provided the comprehensive contextual outlook that is needed to position these attributes in a meaningful way. Next, I discuss the contingencies of servitization within the context of IORs.

5.4.1 Contingencies

The study provides empirical evidence with regard to the contingencies of servitized offerings depicted in the literature. Long-term relationships and service orientation attributes both emerged from the data in line with the extant literature (Lockett et al., 2011; Penttinen and Palmer, 2007; Windahl and Lakemond, 2006). It can be seen from Table 37 that the results of the study comply with the assertions of the extant literature.

Table 37. Contingencies: extant literature and findings

	Bastl et al. (2012)	Lockett et al. (2011)	Tuli et al. (2007)	Penttinen and Palmer (2007)	Windahl and Lakemond (2006)	Oliva and Kallenberg (2003)	Davies et al. (2006)	Vandermerwe and Rada (1988)	Results of the Study
Long-term relation-ships									
Increased network complexity	√	√	√	√	√		√	√	√
Increased reliance on partners	√		√	√	√				√
Alignment of metrics		√				√			√
Service orientation									
Customer focus/centri city		√	√	√		√	√	√	√
Increased risks and uncertain-ties	√		√	√	√	√	√	√	√
Evaluating and managing services	√	√		√			√		√

In addition to these, this study identified internal and external contextual attributes which were significantly important as the drivers of servitization. These attributes were predominantly related to the case company and the industry within which the case study took place (i.e. the trucking industry). Nevertheless, these contextual factors were significantly influential since they required customers to start demanding additional services in an industry which was historically very product oriented. Therefore, ignoring these emerging contextual factors would not be an accurate representation of the complex nature of servitization. In the light of this, long-term relationships, service orientation, and internal and external contextual attributes are discussed in the following paragraphs.

5.4.1.1 Long-term relationships

The longer life cycle of the servitized offerings has resulted in increased levels of collaboration, adaptation and interdependence in the case company within its network (cf. Monczka et al., 1998; Uzzi 1997). Thus, a far more complex

network emerged for servitized offerings where the manufacturer was increasingly relying on its service partners (Penttinen and Palmer, 2007). Based on this longer-term outlook, the manufacturer attempted to align incentives and performance metrics towards the provision of servitized offerings (Martinez et al., 2010; Lockett et al., 2011). On a further note, there were discrepancies within servitized offerings in terms of the long-term orientation of relationships. The longevity of the 'basic' servitized offerings (i.e. product/service offering) was confined within the limits of the contract. This was on average three years for the TruckCo case study. At the end of this period, negotiations were carried out between the manufacturer and customer for a new contract. Nevertheless, the longevity of advanced servitized offerings was not restricted by the contract. In fact, formal contracts were rarely mentioned within these offerings. Here, customers expected TruckCo to provide extra value adding services in a collaborative work partnership manner. As a result, the relationships were predominantly based on a win-win mentality and they lasted for a longer period of time without being constrained by the length of the contracts.

5.4.1.2 Service Orientation

The service orientation in the servitized offerings increased the levels of risks and uncertainties for the manufacturer and the network, as outlined in the literature (cf. Cohen et al., 2006; Johnson and Mena, 2008). This was evident for both of the servitized offerings where a triad and tetrad were formed to provide additional services such as maintenance and telematics. Above all, the service orientation was closely associated with customer centricity (Galbraith, 2002; 2005) or in other words, customer focus (Macdonald et al., 2011; Tuli et al., 2007). With the introduction of servitized offerings, there was a great deal of focus on understanding customers' needs and requirements. The notion of customer focus is considered by many as central to the success of servitization (Baines et al., 2009a; Johnstone et al., 2009; Lindberg and Nordin, 2008). In the context of the case study, customer focus was underlined by understanding customer needs, convenient opening times, personal attention and customization.

5.4.1.3 Other emerging Attributes

In addition to long-term relationships and service orientation, analysis of the results identified two additional contextual attributes that are important for servitization. The first group is *internal organisational attributes*; these include *leadership* and *technology* – the latter being a sub-category of the former. In the TruckCo case study, the move towards servitization was introduced and advocated by the leadership and also the leadership was seen by many as fundamental for the management of servitized offerings. In particular, the CEO of TruckCo was attributed by many as the main driver behind the 'philosophy' of selling solutions as opposed to selling 'a big piece of metal'. Accordingly, the leadership was significantly involved in developing the advanced servitized offerings together with the technology partner and customers through the utilization of telematics technology. Despite this significant finding, there is only a handful of research that investigates the role of leadership in the provision of servitized offerings. Within those studies, this topic is only addressed as a peripheral issue. However, an emerging consensus amongst these studies is that product-based and service-based offerings require different leadership styles (Davies et al., 2006; Fang et al., 2008; Vargo and Lusch, 2004). Baines et al. (2007) also identify the importance of leadership for leading the change from product-centric manufacturing towards servitization. Nevertheless, these extant studies fail to provide further guidelines on the way in which such a leadership could be achieved.

To this end, this study extends the extant knowledge by offering a richer and thick description for this topic. In so doing, the study firstly showed that the proactive involvement of leadership with the other network members facilitated the value added services required for the servitized offerings. Secondly, the study showed the important role of leadership for adopting commercially available technology that made previously inaccessible resources available to the network. Overall, on the basis of the case study findings, I argue that the involvement of leadership is of paramount importance or even antecedent to the success of providing servitized offerings. In so doing, leaders in the organisation

should actively seek new technologies in collaboration with the network to provide the added value required by the customers of servitized offerings.

The second group of attributes identified through the case study is called *external environmental factors*. These attributes are related to the factors outside the manufacturer's organisational boundaries. The primary contextual factor that emerged as important was *customer's demand.* In the case under study, various respondents pointed out that the customers had evolved in recent years from the mind-set of purchasing a truck towards purchasing a business need. In so doing, it is argued that they become more 'professional' in their buying decision and many of the large customers now have a very systematic and detailed approach to purchasing. To this end, a secondary identified factor was *legislation* which acted as an influential driver for shaping customers' demands. For instance, the six-weekly formal inspection required by the MOT in the UK drastically changed customers' views on services. Various interviewees pointed out that this legislation made maintenance and repair services as important as the truck itself for many customers who had historically considered services as secondary or peripheral to the product. Within the extant literature, Brady et al.'s (2005) is one of the first studies to point out the role of government led market reforms, such as privatisation, deregulation and liberalisation as the drivers of demand towards adopting servitized offerings. In the case studied, the government led reforms were regulations in the form of six-weekly inspections and tax reforms driven by the UK government, and CO_2 regulations for exhaust gases driven by the European Union. Accordingly, Neely et al. (2011, p. 3) point to the role of legislation from a network perspective: "The networked nature of the collaborations makes it important to consider the industrial eco-system when analysing complex services. Issues of regulation and legislation clearly influence the way that partners work together and their respective roles and responsibilities". To this end, the findings of Windahl and Lakemond (2006) also underline the importance of understanding the external factors within which the network relationships are positioned. They argue that "[…] external factors may drive the customer need and strengthen the value proposition of the integrated solution for the customer. Early identification of

important driving factors for integrated solutions might open up opportunities to develop new successful business offerings" (Windahl and Lakemond, 2006, p. 819). In the case of TruckCo, the management had proactively developed their offerings to comply with the forthcoming European regulations (i.e. Euro 4, 5 and 6 legislations that regulate exhaust gas emissions).

Overall, the case study findings provide fresh and detailed insights regarding the interplay between customers' demands and legislations, which in turn have implications on IORs in a servitizing network.

5.4.2 Relationship Dimensions

Despite the frequent emphasis on the importance of IORs (Baines et al., 2009a; Davies et al., 2006; Tuli et al., 2007), little is known about what really constitutes these relationships in a servitization context. The handful of studies which have investigated the linkages between servitization and relationships have failed to produce a coherent list of key attributes that could capture the essence of these relationships. An instance of this is in Windahl and Lakemond (2006) where the lack of a relationship framework resulted in the identification of organisational and industrial attributes. To this end, this research adopted Cannon and Perreault's (1999) framework to provide a coherent foundation for relationship attributes to be elicited. The aim of this chapter is not to detail the manifestations of each relationship dimension (see Chapter 4.4.2 for full details) but to provide overarching conclusions by synthesizing the extant literature and emergent findings. An overview of the findings with respect to the literature is illustrated in Table 38. Overall, the findings of this research extend the literature to provide a far more detailed account of IORs in terms of the relationship dimensions. Next, the manifestations of each of the five relationship dimensions are discussed with respect to the literature.

Table 38. The relationship dimensions: extant literature and results

Relationship Dimensions	*Extant Literature* *(Bastl et al., 2012; Johnson and Mena, 2008; Lockett et al., 2011, Windahl and Lakemond, 2006)*	*Results of the Study* (Note: the results for product/service offerings were generally in line with the extant literature. However for advanced servitized offerings a different picture emerged which extends the prior understanding.)
Information Exchange	Open information exchange Multi-directional information exchange Increased frequency and communication channels Extended *communication* channels Exchange of quality information	Involvement of leadership in communication Driven by business outcomes Frequent exchange of business focused *knowledge* mediated by technology, sharing of knowledge is key
Operational Linkages	Highly formalized relationships Closely coupled linkages	Providing *support systems* for customers business Introduction of p*reventative services* in the form of supplier performance measurement and technology utilization
Legal Bonds	Relational mechanisms act as substitute or as complement to contractual mechanisms Risk and benefit sharing practices	For other offerings *nature of contract* is key whereas advanced servitized offerings are not based on contracts but rather based on flexible work partnerships
Cooperative Norms	Formalized cooperative norms Establishment of firm-level partnering competences Greater reliance upon relational mechanisms	Depends on the *nature of relationship* with the exchange partner. The closer the relationship the higher the cooperative norms.
Buyer/Seller Adaptations	Higher levels of relationship adaptations Reciprocity in adaptations	Adaptations geared towards customers' business in the form of *innovation* from a long-term perspective

5.4.2.1 Information Exchange

Cannon and Perreault (1999) define information exchange as expectations of open sharing of information that may be useful to the organisations involved in the relationship. To this end, respondents were asked questions around the way in which they communicate, interact and share information with other network members. As a result of the case study, communication and knowledge were identified as the attributes for the information exchange dimension.

Communication in this context is defined as the conversation or discourse amongst the organisations in the network. The literature on servitization emphasizes the role of information exchange as an important antecedent for effective provision of servitization (Bastl et al., 2012; Johnson and Mena, 2008; Lightfoot et al., 2011; Mathieu, 2001). To this end, it has been argued that managing the communication across the network is a key activity for understanding and responding to customers' needs (Nordin and Servadio, 2012). Both Johnson and Mena (2008) and Bastl et al. (2012) demonstrate that servitized networks –as opposed to product-based networks- requires an open and multi-directional information exchange with increased frequency and extended communication channels. These assertions are also shared by the findings of this study. Nevertheless, both of these studies treat the servitization concept as a whole and therefore fail to demonstrate the differences amongst servitized offerings with respect to the communication aspects. To this end, the TruckCo case study provides fresh evidence by using the offerings as the reference points for analysis. The results show that there are a number of differences amongst the servitized offerings. First one is about the level in which communications are enacted. For product/service offering, communication was predominantly driven by the key account managers on the provider side and the fleet engineers on the customer side. For advanced offering, however, the leadership, including the CEOs, were involved in the communication activities. The involvement of leadership was found to be of paramount importance or even antecedent to the success of providing advanced servitized offerings. This was a result of the second observed difference amongst the servitized offerings which related to the nature of interactions. Within this aspect, the discourse amongst the network pertaining to the product/service offering was predominantly based on the service i.e. the operational information related to the repair and maintenance services. On the other hand for advanced offerings, the communications were driven by the leadership in order to develop innovative ways to improve the business performance of the customer. To this end, leaders in the organisation actively sought new technologies in

collaboration with the network to provide the added value required by the customers of advanced servitized offerings.

Knowledge within this context is essentially defined as the data, information or know-how transferred during the act of communication. In terms of *knowledge*, there were observable differences in the way in which data and knowledge were enacted within each of the offerings (Tuli et al., 2007). Davenport et al., (2001) studied the role of data mining software for the decision making process whereby the software allowed the managers to convert data into knowledge and knowledge into results. This was depicted as a recurring process where the results produced further data which was converted into knowledge and again into further results. This 'knowledge cycle' was evident for only servitized offerings in the study. For basic offering, only a limited amount of data related to the price and product features were exchanged. For product/service offering, the networks utilized the available service performance data and turn it into operational knowledge. For this purpose, maintenance related data was collected throughout the network which was then used to assess suppliers' performance and accordingly the bonuses or incentives were granted to them by TruckCo. This in turn resulted in higher service performance levels throughout the network. For advanced servitized offerings, an additional knowledge cycle was created through the telematics technology. Nevertheless, this time customers were also a part of the knowledge creation process. As such, the utilization of telematics data resulted in lower fuel consumption, fewer accidents, lower CO_2 emissions, better delivery and instant location capability. Overall, it can be seen that knowledge as a resource was only exchanged for other offerings, whereas for advanced offerings the knowledge was co-created with the network involving customer, manufacturer, partner and suppliers.

5.4.2.2 Operational Linkages

According to Cannon and Perreault (1999), *operational linkages* dimension is defined as the extent to which the systems and processes are linked in order to facilitate operations within the interacting organisations (Cannon and Perreault, 1999). For this dimension, respondents were asked questions about the

operational systems and routines that link their organisation to other network members. At the highest level, the results of the study show similarities with the extant literature (Bastl et al., 2012; Johnson and Mena, 2008; Penttinen and Palmer, 2007). For instance, the introduction of servitized offerings resulted in the development of formalized and closely associated operational systems amongst TruckCo and its network. An example is the online real time inventory systems which allowed the dealers to locate the required spare parts throughout the whole network of dealers' and TruckCo's warehouses.

The first attribute identified for this dimension is *support systems* which refer to the inter-organisational information systems that connect the different firms in the network. In manufacturing contexts, it has long been argued that the modern information and communication technologies, such as RFID, are argued to increase the breadth and depth of communication leading to improvements in the operational activities of the organisations involved in the network (Vickery, et al., 2003; White et al., 2008). These technologies are especially relevant to the delivery of servitized offerings. For instance, Belvedere et al. (2011) showed that information and communication technologies can lead to increased value for customer by improving the responsiveness of operations as well as the quality of products. In addition, Johnson and Mena (2008) and Lightfoot et al. (2011) found that servitized supply networks needs to be more responsive as opposed to product supply chains and these networks require real time information to effectively support the offerings. In the TruckCo case study, support systems for the product-based offerings were based on the warranty related issues and therefore support meant product support for these offerings. On the other hand for product/service offerings, support systems were mainly related to the technical aspects of the repair and maintenance operations. Therefore these systems were designed to improve the service operations. For advanced offerings however, support systems included telematics technology on top of the service operations systems. The main difference of telematics technologies was the fact that they also included the information obtained from customer's operations. Therefore,

the support systems for advanced servitized offerings included customers, TruckCo, TelCo and suppliers (i.e. dealer network).

Overall, the utilization of the information obtained from the network resulted in the creation of a number of value adding activities. This then leads to the second attribute for operational linkages dimension which is called p*reventative services.* These were activities that provide high product availability by reducing or anticipating unplanned breakdowns. To this end, these can be considered services that are built upon the support systems. The product-based offerings had no such services. For the product/service offerings, the case company, TruckCo, used the information obtained from the service operations to develop a financial bonus system, whereby on the condition that the desired service performance is achieved for the customer, the suppliers receive extra financial benefits. This was seen by many suppliers as the main driver to achieve the required service performance. Therefore this system helped to improve the service performance of the network. For advanced offerings, TruckCo together with its technology partner TelCo implemented a number of activities based on the data obtained through telematics, such as the individualised training courses customized for the particular driver based on his/her usage data. These services were designed towards improving the performance of the customer's business. For instance customized training programmes were designed to achieve less fuel costs, fewer accidents and lower CO_2 emissions for customers. To this end, customers were actively involved in the process by providing operational as well as political insight into their organisations which allowed TruckCo and its network to develop *preventative services* crafted to their needs.

In conclusion, the first attribute of operational linkages dimension (i.e. support systems) is based on the systems that are designed to improve the service performance of the manufacturer and its network. Therefore, these are predominantly based on the technical aspects of support (such as the online inventory systems). There are only a few studies that studied the operational linkages in servitization contexts. In majority of these studies, the focus has

been on the technical systems (i.e. Bastl et al., 2012; Johnson and Mena, 2008; Lightfoot et al., 2011). For instance, Lightfoot et al. (2011) predominantly focussed on the of information and communication technologies used in servitization vs. pure product manufacturing contexts. However, this doctoral study takes a step further to identify the second attribute for operational linkages (i.e. preventative services). These are value adding services created through the utilization of the information obtained from the network. In particular, these services are designed to improve customer's business performance. The customized driver training programmes of TruckCo were the prime examples of such services which provided additional benefits in the form of less fuel costs, fewer accidents and lower CO_2 emissions. This type of support also required the involvement of the customer by providing operational and political insights (cf. Tuli et al., 2007). Thus, it can be concluded that the deployment of technical support systems, in the aim of improving service operations, provides the information to create new value adding services that helps customers' business needs.

5.4.2.3 Legal Bonds

"Legal bonds are detailed and binding contractual agreements that specify the obligations and roles of both parties in the relationship" (Cannon and Perreault, 1999, p. 443). To this end, respondents were asked questions about the contractual agreements amongst the network members. Nature of Contract emerged as the main attribute within this dimension. This attribute refers to the content of the formal contractual agreement in an IOR. For the *basic offering*, it was a factory standard warranty contract. For the *product/service offering*, the contracts were mainly individualised to fit the needs of the particular customer. These contracts varied according to the number of services and spare parts included in the contract. These contracts were mainly focused on service operations in terms of required service levels and parts prices. Therefore, the contents of the contract were frequently quoted and used as reference points to clarify whether the required repair and maintenance activity was covered by the

contract. For *advanced offering* however, a totally different picture emerged. The contracts were rarely mentioned for the telematics related discussions. Interestingly for this offering, the network for repair and maintenance services were still contract based whereas the network for telematics services were governed by relational mechanisms. In particular, the relationship amongst TruckCo, TelCo and customers was predominantly based on collaborative work partnership with almost no reference to contracts. Interestingly, the findings show that as servitized offerings become more complex with advanced services, the formal contracts becomes less effective in the governance of these relationships. This can be attributed to the long-term nature of the relationships as well as to the uncertainties and risks related to the services. To this end, the results contradict the extant IOR literature which argues that formal contracts should be used as safeguards for uncertain environments (Pfeffer and Salancik, 1978) that can create opportunistic behaviour (McIvor, 2009). In fact, Bastl et al. (2012), which is the only known study that studied role of legal bonds in a servitization context, also found similar results in terms of relational mechanisms. Albeit their study only focussed on the legal bonds with suppliers, they provide evidence that servitization causes increased exchange complexity which in turn makes the legal contracts ineffective to cope with day to day activities. Thus, relational mechanisms, such as trust and mutual cooperation, act as complementary to legal contracts in servitization contexts. Nevertheless, it is also important to note that all the customers of advanced offerings had a long history with TruckCo. This provided the required trust and mutual understanding that allowed the development of relational mechanisms for these offerings. In other words, the trust in these partnerships did not start with these offerings nevertheless it is fair to indicate that servitization helped the development of trust and cooperation which underpin the relational mechanisms in place.

5.4.2.4 Cooperative Norms

Cannon and Perreault (1999) defined cooperative norms as the expectations that exchanging parties have about working together to achieve mutual and individual goals jointly. For this dimension, respondents were asked questions about the behavioural expectations regarding their network partners. The *nature of relationship* emerged as the main attribute for this dimension. This refers to the characteristics of relationships. The product offering was not observed to result in cooperative behaviours since the relationships with customers were transactional with short-term duration, low information exchange, fewer communication channels and relatively lower levels of commitment on both sides. Nevertheless with respect to the servitized offerings, the findings indicate that there were observable cooperative behaviours on the part of the all network members as a result of servitization. However, for the *product/service offering* where the general interaction could be characterized as relational, there was an evident emphasis on the longer term outlook, increased information exchange, frequent communication with higher levels of commitment and trust. In addition, the orientation of the relationship moved away from a win-lose mentality towards a win-win mindset for all parties in the relationship. Nevertheless, this was more visible in the *advanced offering.* In addition to the already explained relationship with the dealers, there was a much more integrative and collaborative relationship between customers and the TruckCo-TelCo partnership.

Within the context of servitization, Bastl et al. (2012) provides evidence for the emergence of new relational norms between a manufacturer and its supply network. Nevertheless, their case study also shows that the actual manifestations of cooperative norms were rare and only based on the context and the relationship, therefore these norms were not uniformly applied to the network. These results are in line with the findings of the TruckCo case study. However this study takes a step further to identify that the cooperative norms are mainly driven by the nature of relationships. A perfect example of this aspect is the TruckCo-TelCo relationship. Despite the fact that TelCo is actually

a supplier of TruckCo, it is considered an equal strategic partner. Therefore TelCo, in comparison to dealers, enjoyed a far more advanced access to information as well as to the leadership of TruckCo.

5.4.2.5 Buyer-seller Adaptations

Relationship-specific adaptations are investments in adaptations to process, product, or procedures specific to the needs or capabilities of an exchange partner. Within this context, respondents were asked questions around the specific adaptations to other network members.

Within the servitization literature, servitization is argued to result in higher levels of relationship specific adaptations which were underpinned by the reciprocal expectations amongst the network members (Penttinen and Palmer, 2007). The results of Bastl et al. (2012) show that emergence of adaptations were predominantly context specific and based on the organisations involved. However in this study, adaptations were conceptualised as physical infrastructure investments towards the relationships. This conceptualisation is mainly driven by manufacturer's perspective. Nevertheless servitization by definition is closely related with addressing the customer's evolving needs. To this end, this study adopted the customer perspective to identify *innovation* as the main theme for this dimension. Within this context, innovation includes technological capabilities as well as the ability to design new products and/or services. For product-based offerings, adaptations were perceived in terms of product innovation. Therefore, product features such as fuel efficiency or reliability and also the level of customizability were perceived to be important by customers. Within the product/service offerings, customers were more interested in the process innovation regarding the maintenance service procedures. Therefore, discussions between the customers and the TruckCo network were focused on improving the performance of the maintenance operations. On the other hand, customers of advanced offerings expected something more. They were interested in innovations that truck manufacturers

could easily use and benefit from in their business operations. For advanced offerings, innovation was mentioned from a long-term perspective and telematics technology was at the centre of the innovation discussions.

In conclusion, the customer perspective was required to understand the relationship specific adaptations. To this end, customers of product offerings required adaptations in terms of product innovation whereas customers for product/service offering required process innovations. On the other hand, customers of advanced servitized offerings perceived business innovations that directly affect their bottom line profits, as the primary driver for adaptations.

5.4.2.6 The range of products and services

Range of products and services, which refers to the variety of products and services, emerged as an attribute which did not fit into any of the five relationship dimensions. This was considered acceptable, given the exploratory nature of the interviews. However at this point, the attribute should not be ignored, given the importance of this to the respondents. There are no known studies which explicitly investigate range of products and services in servitization context. Instead this topic was treated as a peripheral issue as part of the need to satisfy customer requirements. For instance, there is much discussion about the need to focus on providing a range of offerings that meet individual customer needs (Brady et al., 2005; Neu and Brown, 2005). It follows that servitized providers need to consider the changing needs of buyers in order to satisfy evolving customer needs (Vandermerwe, 2000; Pentinnen and Palmer, 2007). Accordingly there is a need to provide customers with options in terms of products and associated services. To this end, results of the case study shows that range for basic offerings meant the provision of vehicles with different sizes and specifications. Hence, product range was seen as important. On the other hand for product service offerings, both product and service variety was considered important for customers. In fact, the customers expected the dealers (i.e. the service suppliers) to be their ‘one-stop shop’ for all vehicle

related parts and services. For advanced offerings however, range meant the variety of value adding services. The customers of this offering expected TruckCo and its network to continuously provide innovative value adding services in order to improve their business performance.

In conclusion, the range attribute was perceived as important for meeting customers' needs. Although this attribute did not fit in any of the relationship dimensions, many respondents considered the attribute important especially for customers. To this end, the study showed that range was conceived differently for product and servitized offerings. For basic offerings, it was based on product variety, and for servitized offerings it was perceived in terms of service availability and service innovation.

5.4.3 Outcomes

The study provided a more nuanced and detailed explanation of what performance actually means in a servitization context. To this end, it identified business performance, operational performance, manufacturer satisfaction and loyalty as key attributes.

Since the introduction of servitization over a decade ago, the case company, TruckCo, had quadrupled its revenues and steadily increased its market share, becoming one of the leading manufacturers in the industry. Nevertheless, these years had also seen large-scale investments by the parent company as part of the corporate strategy to expand the business in the UK. Thus, as argued by many interviewees, the success of the company's performance was attributed to a number of factors, such as competitors going out of business, increased investments and the adoption of servitization. Therefore, servitization was seen as a part of the bigger picture for the performance of the company.

Despite the fact that servitized offerings were introduced more than a decade ago, it was shown that a large percentage of the customer base (40%) was still driven by product and price. In addition, the advanced servitized offerings only

accounted for 10% of the total business. This illustrates that servitization requires a long time and large, gradual investments to achieve the intended outcome. This view is also supported by Gebauer et al. (2005) who contend that theoretically the shift to servitization leads to higher revenues, yet in practice this requires a great deal of time and investment. A decade after the introduction of servitization, TruckCo was still constantly restructuring its organisation and relationships during the period of the study in order to accommodate the emerging dynamics of servitized offerings.

Fang et al. (2008) identified a number of conditions that need to be fulfilled for a manufacturer to generate shareholder value through servitization. They posit that firstly, a manufacturer needs to be in a mature industry with an established customer base and secondly the service revenue should account for 20-30% of the business. Thirdly, the service activities need to be closely associated with the manufactured product base. And fourthly, they argue that servitization is likely to produce higher shareholder value in industries where the customer needs and requirements are highly volatile and erratic. Otherwise, servitization is likely to have an insignificant effect on the firm's performance (Fang et al., 2008). To some extent the case study showed evidence in support of Fang et al.'s (2008) the abovementioned assertions. The trucking industry within which the case study took place is well established and could rightly be considered as mature. TruckCo as a manufacturer has been operating in the UK for over four decades and has an established customer base. In total, the service business accounted for well over 50% of the total business. Accordingly, the services provided by the TruckCo network were centred on the truck which is the core product of the company. Overall, the first three conditions argued by Fang et al. (2008) were all evident in the TruckCo case.

Regarding the fourth condition, however, the trucking industry is historically known to be very product and engineering oriented and relatedly customer demands were traditionally bounded by price and product features. Recent years have seen an equal emphasis on the service side of the business throughout the industry. Nevertheless, the changes in the requirements of

customers were by no means radical, instead these were gradual changes spanning years. This is also evident due to the limited adoption of advanced servitized offerings throughout the industry. Within this understanding, the findings does not provide enough evidence towards Fang et al.'s (2008) fourth condition which states that a manufacturer needs to be in a volatile industry (i.e. an industry characterized by rapid changes in customer expectations) to benefit from servitization.

Within the servitization literature, the benefits were characterized by three dimensions: revenue enhancing, value enhancing and sustained benefits (Lockett et al., 2011). Overall, the results of the study showed similar patterns to the extant literature, as illustrated by Table 39.

Table 39. Outcomes: extant literature and results

	Baines et al. (2007)	Penttinen and Palmer (2007)	Oliva and Kallenberg (2003)	Wise and Baumgartner (1999)	Desmet et al. (1998)	Cohen and Whang (1997)	Vandermerwe and Rada (1988)	Results of the study
Revenue-Enhancing Benefits								
Provides additional sources of revenue	√		√	√	√			√
Creates more stable sources of revenue			√					√
Services tend to have higher margins	√		√	√				
Value-Enhancing Benefits								
Customers demand more services	√		√	√	√		√	√
Allows a better understanding of customer needs		√				√	√	√
Allows maintaining relationships with customers	√	√		√				√
Creates a more comprehensive solution to needs		√			√			√
Improves after-sales service	√				√	√		√
Provides transparency of life cycle costs for the customer					√		√	√
Sustained Benefits								
Service is a differentiating factor (de-commoditization)	√	√			√	√		√
Services are more difficult to imitate	√		√	√	√		√	√
Facilitates customer lock-in	√			√		√	√	√
Product-service facilitate the diffusion of innovations							√	√

In terms of revenue enhancing benefits, respondents at the case company argued that servitized offerings provided additional sources of revenue (Baines et al., 2007; Oliva and Kallenberg, 2003; Wise and Baumgartner, 1999) and

created a stable income (Oliva and Kallenberg, 2003). Nevertheless, the contention that services tend to have higher profit margins as argued by some scholars (Baines et al., 2007; Oliva and Kallenberg, 2003; Wise and Baumgartner, 1999) were contested by the findings of the case study.

Many respondents at TruckCo provided different accounts of where the company actually 'makes the money'. In general there were two differing views. 1) The service component of the offering is where most profits are made whereas the trucks are sold at a minimum profit or at times at a loss in order to engage customers into a service; 2) The profit is made through the selling of trucks and the service component is there to facilitate the sale of the truck. The view of senior management resided with the former whereas the middle or operation level managers primarily had a view of the latter. In the light of this, the financial accounts of the company were investigated to provide more clarification on the matter. Here the main challenge was that the accounts were structured in such a way that there was no possible way to see if the servitized offerings provided higher margins of profit, as opposed to the product offerings. It was only possible to determine that services as a whole accounted for more than 50% of the total business. When this finding was pointed out to the business development managers who were responsible for utilizing these financial figures, I was informed that the company was in the process of implementing a new system to accommodate those concerns through the use of different accounting software. Nevertheless, this initiative did not materialize before the end of the study. Therefore, I argue that the data did not provide enough evidence to claim that servitized offerings have higher profit margins than product offerings. Within this overall understanding, it was identified that the revenue enhancing benefits are described in terms of business performance for the manufacturer.

In terms of value enhancing and sustained benefits, the results corroborate the findings of the extant literature (see Table 39). The findings particularly underline that servitized offerings allow a better understanding of customer needs (Cohen and Whang, 1997; Penttinen and Palmer, 2007; Vandermerwe

and Rada, 1988), creates a solution that addresses customers' business needs (Desmet et al., 1998; Penttinen and Palmer, 2007) and improves after sales services (Baines et al., 2007; Cohen and Whang, 1997; Desmet et al., 1998). In addition, this study identified that these benefits were underlined by *operational performance* and accordingly value enhancing benefits were perceived, based on operational efficiency. For sustained benefits, the results show that servitized offerings facilitate customer lock-in (Baines et al., 2007; Cohen and Whang, 1997; Vandermerwe and Rada, 1988; Wise and Baumgartner, 1999) as well as the diffusion of innovations (Vandermerwe and Rada, 1988) through the creation of new resources within the network. To this end, the sustained benefits were actually enacted within a long-term outlook which was dependent on the attributes of *manufacturer satisfaction* and *loyalty*.

The extant literature highlights manufacturer centric performance outcomes for servitization (Cohen et al., 2006; Oliva and Kallenberg, 2003; Wise and Baumgartner, 1999). However the study showed the perception of performance shifts from manufacturer towards customers as the offerings move towards advanced servitized offerings. This was clearly evident in the study. Firstly, for the basic offering, all the emergent performance attributes were related to the product and manufacturer. For instance, satisfaction with manufacturers was solely based on the product for this offering. For the product/service offering, performance was perceived as an amalgam of product and service. However, within this offering in addition to TruckCo's performance, the network's performance was equally important. For the advanced offering, performance was perceived as the customer's performance. In other words for these offerings, performance discussions were related to saving costs and increasing revenues for the customer's business.

This concludes the discussion of the relationship attributes section which was divided into three main dimensions based on the conceptual framework (i.e. contingencies, relationship dimensions and outcomes). Through the analysis of the case study findings, a rich and detailed description was depicted for the implications of servitization on the network. These emerging insights

necessitate the revision of the conceptual framework to accommodate the findings which is the focus of the next section.

5.5 The Conceptual Framework: Revisited

The conceptual framework was developed based on the reviewed literature and the resultant research questions. In general, there were three main areas of inquiry in the framework: offering types, network structures and relationship attributes. In the light of the emerging results, the conceptual framework has been modified to accommodate the contributions of the study to the extant knowledge. These emerging results are illustrated in Figure 15 in red color.

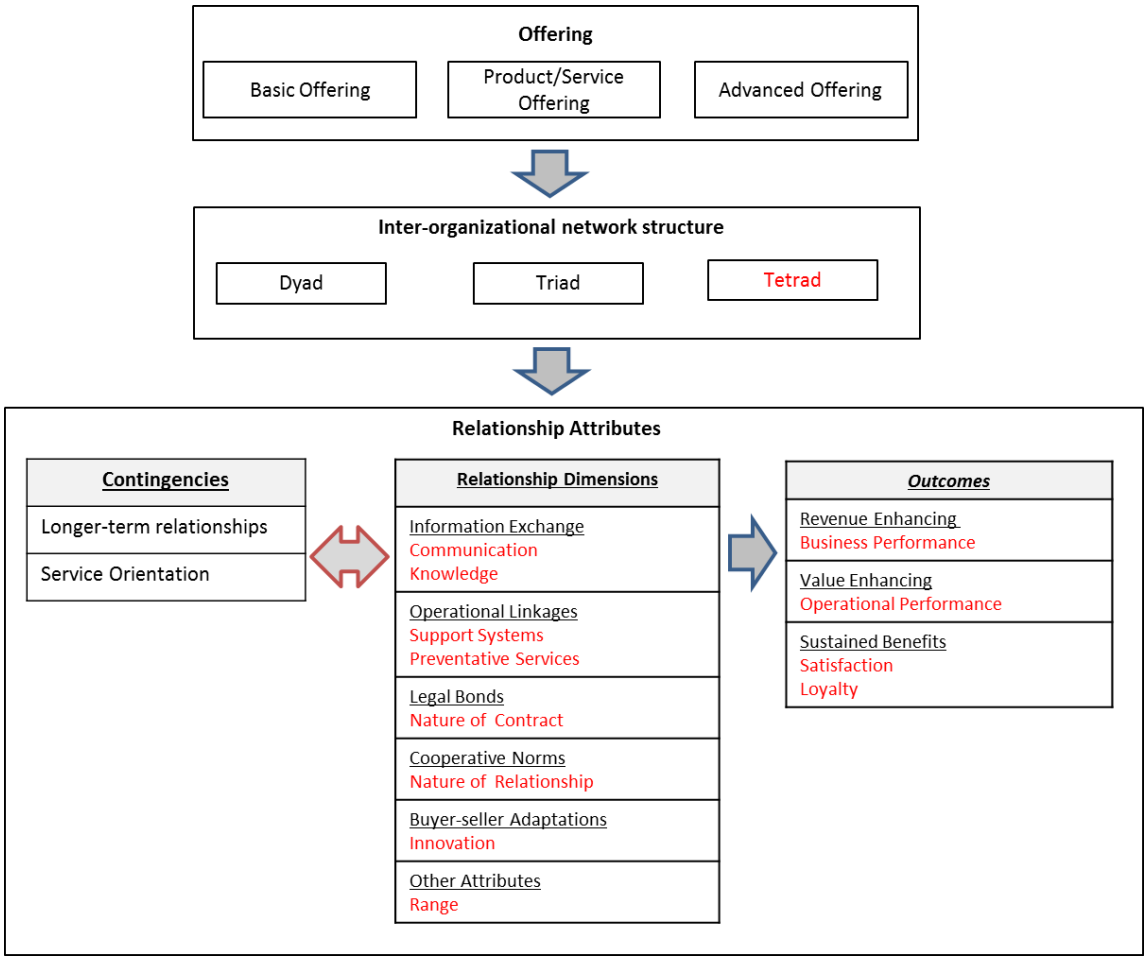


Figure 15. The modified framework

Overall, there are four areas of modifications for the framework. Firstly the tetradic network structure is added. Within the context of the TruckCo case study, the advanced offering resulted in a tetradic network structure. Thus, what was originally conceptualised as an extended network materialised through the case study in the form of a tetradic network structure. Naturally, the intention here is not to make generalisations to claim that all advanced offerings have a tetradic network structure. Instead what is shown here through the relationship between the offering types and the network structure is the contention that as the offerings move towards advanced servitized offerings the network structure becomes more complex in terms of structure and network focus. The case study findings illustrate that the basic offerings have a dyadic structure while the product/service offerings have a tetradic network structure and finally the advanced servitized offerings are also illustrated to have a tetradic network structure.

The second modification for the conceptual framework involved the addition of emergent relationship attributes. For this area of inquiry, Cannon and Perreault's (1999) framework was originally used to set the foundations within which the IORs could be analysed. The study provided further refinement to these dimensions by uncovering their actual meanings within the context of servitization. To this end, the relationship attributes were identified as: communication and knowledge for the information exchange dimension; support systems and preventative services for the operational linkages dimension; nature of contract for the legal bonds dimension; nature of the relationship for the cooperative norms dimension; innovation for the buyer-seller adaptations dimension; and finally, range as an emergent attribute. In relation to the offering types, the results show that communication based on price and product features emerged as the key attribute for the basic offering whereas for the product/service offering, a relational interaction was evident, underpinned by communication, support systems, preventative services and the nature of contract,. On the other hand, the advanced offering had a far more integrated relationship driven by communication, knowledge, preventative services, and innovation.

The third modification to the framework was the addition of identified attributes for the outcomes dimension. This section of the study aimed to identify the relevant key performance measures in relation to each offering, as perceived by the network. In essence, it explicates how the respondents of the study explained the way in which the three offerings impacted on performance. For this section, respondents were asked broad questions about the impact of these offerings. These questions were intentionally left open-ended since the respondents were allowed to come up with their own understanding of performance. As a result of the analysis, four key attributes emerged: business performance for revenue enhancing outcomes; operational performance for value enhancing outcomes; and both satisfaction and loyalty for sustained outcomes. In relation to the offering types, for the basic offering, all the emergent performance attributes were related to the product and manufacturer. For instance, satisfaction with manufacturers was solely based on the product for this offering. For the product/service offering, performance was perceived as an amalgam of product and service. However within this offering, in addition to TruckCo's performance, the network's performance was equally important. For the advanced offering, performance was perceived as the customer's performance. In other words for these offerings, performance discussions were related to a customer's business.

The fourth and final addition to the conceptual framework is associated with the linkages between contingencies and relationship dimensions. For the relationship attributes (i.e. RQ3), in line with the reviewed literature, the conceptual framework originally showed that contingent factors of servitization impact on various dimensions of relationships. In particular, the extant literature argues that the long-term nature of servitized offerings, together with service orientation, impacts on the six relationship dimensions (cf. Bastl et al., 2012; Lockett et al., 2011). These were elaborated on in Chapter 2.5. To this end, the case study took a step further to demonstrate that long-term relationships and the service orientation do not automatically lead to changes in the IORs. Instead, these contingent characteristics of servitization are actually achieved through management of the key attributes for IORs which are identified in the

study. In other words, the findings acknowledge that long-term relationships and the service orientation are embedded characteristics of servitized offerings and they impact on the relationship dynamics. Nevertheless, the study further shows that it is through the management of identified relationship attributes that the contingencies are actually realised and sustained. For instance, findings show that the longer life cycle of the servitized offerings has resulted in increased levels of collaboration and interdependence between the case company and the rest of the network (cf. Monczka et al., 1998; Uzzi, 1997). However, this was only achieved through the deployment of increased communication channels and the involvement of leadership in communication. In addition, the frequent exchange of information was based on business focused knowledge mediated by technology which was particularly evident for the advanced servitized offering.

On the other hand, the service component in the servitized offerings increased the levels of risk and uncertainty for the manufacturer and the network, as outlined in the literature (cf. Cohen et al., 2006; Johnson and Mena, 2008). Again, these risks were managed through the identified relationship attributes. In order to mitigate those risks, the manufacturer introduced support systems and preventative services in the form of supplier performance measurement and technology utilization. These were seen as mechanisms to cope with the emerging risks and uncertainties involved in service delivery. On a further note, the service orientation was closely associated with customer centricity (Galbraith, 2002; 2005) or in other words, customer focus (Macdonald et al., 2011; Tuli et al., 2007). The notion of customer focus is considered by many as central to the success of servitization (Baines et al., 2009a; Johnstone et al., 2009; Lindberg and Nordin, 2008). Again, in terms of relationship attributes, the case results show that the manufacturer provided innovation and a range of products and services to attend to the needs of the customers.

Overall, in the light of these points, I argue that the contingencies (i.e. long-term relationships and service orientation) are introduced to the network as part of the servitized offerings but it is actually through management of relationship

attributes that these contingencies are realised and sustained. This was the fourth and final modification to the network.

5.6 Summary of Discussion Section

Chapter 5 served as the discussion chapter. Within this chapter, the emerging findings are discussed with respect to the extant literature. In so doing, the conceptual framework which is based on the extant literature is further extended by the integration of the findings. The emergent findings provide a rich set of data that supports certain aspects and contradicts or extends various others in relation to the extant body of knowledge.

6 CONCLUSION

6.1 Overview of the Chapter

Chapter 6 endeavours to summarize the conclusions that were drawn from this thesis. The chapter commences with the presentation of the research problem and the rationale behind the need to conduct this research, which encompasses the gap in the literature and the identified research questions. Next, I discuss the manifestations of pragmatism throughout the adopted research methodology. Here, particular attention is paid to describing the abductive case study approach that is underlined by pragmatism. This is followed by the theoretical and managerial contributions sections whereby the implications of the study are documented both in terms of academia and practice. Subsequently, the limitations of the study are detailed. Finally, a number of research avenues are identified for future studies.

6.2 Summary of the Research Problem and Rationale

This research aims to explore the implications of servitization on a manufacturing network. In so doing, it addresses an important gap in both academia and practice. In terms of servitization, recent years have witnessed a growth of interest in manufacturers attempting to move downstream and provide innovative solutions composed of associated services and manufactured goods (Oliva and Kallenberg, 2003; Wise and Baumgartner, 1999). For example, Rolls-Royce now offers customers contracts based on engine usage – known as *power by the hour* (Baines et al., 2007; Cohen et al., 2006). Other examples include IBM moving from selling hardware to providing information management solutions (Chase and Apte, 2007; Gerstner, 2002). Many scholars argue that servitizing manufacturers require significant changes to their organisational structure (Galbraith, 2005), corporate strategy (Ren and Gregory, 2007) or operations strategy (Baines et al., 2009a) in order to support the servitized offerings. Another emergent challenge for manufacturers is identified as the need to manage the relationships in the network (Bastl et al., 2012; Tuli et al.,

2007; Windahl and Lakemond, 2006). This is also evident in industry. For instance, Alstom has long been using third party suppliers to provide customer service support (Brady et al., 2005). Another example is Cisco which is dependent on its network of suppliers who support Cisco's equipment located on customer sites (Cohen et al., 2006). In addition, further studies have also shown that a proactive network approach to the provision of servitization is essential for manufacturing firms (Cova and Salle, 2008; Johnsen et al., 2009). Davies (2004, p. 753) even argue that "For many firms, the biggest challenge will be developing the capabilities to integrate different pieces of a system provided increasingly by an external network of specialized component suppliers, subcontractors and service providers".

Despite these recurring assertions regarding the importance of the network, there has only been a handful of studies to date that have investigated this topic. In one of the few known studies on this topic, Martinez et al. (2010) investigated the change process of a servitization provider through the lens of a provider and two of its suppliers. Their study has found empirical evidence that supports the notion that manufacturers need to change the way they manage their relationships with suppliers and customers due to the introduction of servitization. This change is characterized in terms of cooperative norms of behaviour, greater know-how and information exchange, relationship transparency, mutual adaptations and tighter operational linkages (cf. Bastl et al., 2012). This finding is also supported by other studies, from marketing discipline (e.g. Windahl and Lakemond, 2006) and from operations management discipline (e.g. Baines et al., 2009a).

Windahl and Lakemond (2006) investigated how and to what extent network relationships facilitate or hinder the development of integrated solutions. In so doing, they identified six factors which are paramount to integrated solutions development: 1) the firm's position in the network; 2) the strength of the relationship amongst different actors; 3) the impact on existing internal activities; 4) the solutions' impact on customers; 5) the firm's network horizon; and 6) external determinants. In a recent study, Bastl et al. (2012) use Cannon

and Perreault's (1999) relationship framework to analyse the behavioural expectations amongst a manufacturer and two supplier organisations. Their study is useful in terms of setting the foundations for a theoretical framework to analyse the IORs in a servitization context. The results of their case study show that there are substantial implications for servitization on the relationships with suppliers, which are also in line with the findings of Penttinen and Palmer (2007). In terms of the network structures, the literature claims that product-based offerings are delivered through a dyadic structure (Hallen et al., 1991) whereas service-based offerings are argued to be delivered in a triadic structure (Bastl et al., 2012; Holma, 2009).

Within the general servitization literature, Gulati and Kletter (2005, p. 77) posit that "historically, companies focused their expertise and business processes on managing physical assets (e.g., manufacturing facilities, products, retail locations) and more recently on intellectual assets (e.g., R&D, patenting). Now, however, companies are increasingly applying a disciplined approach to managing their network of relationships, effectively treating these relationships as assets — increasingly precious assets". Nevertheless the existing research on the implications of servitization on relationships has not entirely focused on the network as a whole. In particular, the extant research remains equivocal in terms of providing a comprehensive account of what really constitutes these relationships in a servitization context. Given the scarce research on this matter, I argue that inter-organisational relationships in servitization can even be considered as black boxes. In particular, the key attributes for different servitized offerings are not known and in addition, the literature fails to provide sufficient empirical evidence on the way in which the network is structured to deliver servitized offerings. In the light of these points, as argued by many (e.g. Tuli et al., 2007; Windahl and Lakemond, 2006), there is a need for a broader focus on the network to investigate the implications of servitization on the relationships spanning the customers, suppliers and partners.

In this thesis, I provide fresh empirical evidence regarding the relationships across the network in the light of servitization. In particular, three main areas of inquiry are investigated which provide the foundations for a rich and detailed explanation of the phenomena under scrutiny. These areas include the offerings, network structures and relationships which are the focus of the first three research questions and the fourth research question is focused on the linkages between these three areas of inquiry. The research objective and questions are detailed below:

Research Objective: To explore how different product and servitized offerings impact on the inter-organisational structure and relationships of a manufacturing network.

> *RQ 1: What are the different types of products and servitized offerings provided by a manufacturer and what customer imperatives do they need?*
>
> *RQ 2: What are the inter-organisational network structures required to deliver the different types of product and servitized offerings?*
>
> *RQ 3: What relationship attributes support the delivery of the different types of product and servitized offerings?*
>
> *RQ4: What are the linkages between the offerings, inter-organisational network structure and relationship attributes?*

6.3 Manifestations of Pragmatism

This research is underpinned by a pragmatist research philosophy. Pragmatism is a philosophical stance which is not positioned within the dichotomy of positivism versus constructivism (Morgan, 2007). Accordingly, the research approach is not defined by induction or deduction. Instead, a pragmatist research approach is based on ‘abductive reasoning’ (Morgan, 2007). This essentially refers to the movement between induction and deduction throughout the research process. In so doing, this approach does not treat practice and theory in isolation during the actual investigation of the phenomena but treats them simultaneously in an iterative manner. To this end, I argue that the primary contribution of an abductive approach is that it is an accurate representation of

the research process. I argue that induction and deduction alone are not appropriate labels for the process carried out in this research.

Various examples of abduction are manifested in this research. For instance in terms of contingencies identified, long-term relationships and service orientation emerged in line with the servitization literature whereas internal and external contextual factors emerged through the research. This resulted in a back and forth movement between the data and literature, such as the discussion of servitization literature pertaining to government led legislations (Brady et al., 2005). The same can be said for the emergent leadership attribute. Further on, the identification of relationship attributes in the light of Cannon and Perreault's (1999) framework was another instance of an abductive approach. Here, the relationship dimensions were developed by Cannon and Perreault (1999) and when they were investigated in a servitization context, new attributes emerged which required the researcher to revisit the literature as a result of the findings. For instance, communication and knowledge emerged as the key attributes for the information exchange dimension.

An important doctrine of pragmatism is the notion of 'knowing' (Bromley, 2008) whereby knowledge is seen as a dynamic and evolving phenomenon. To this end, pragmatism instructs researchers to produce 'warranted assertions' as opposed to 'objective truths' (Johnson and Onwuegbuzie, 2004). In other words, researchers should reveal how actors or variables tend to react under certain conditions by acknowledging the limitations of such assertions. It is important to point out that pragmatism values the role of social, ethical, historical and political contexts for the research phenomena (Wicks and Freeman, 1998). In so doing, pragmatism is unique in its construction of reality where the produced knowledge (i.e. warranted assertions) is always considered together with its conditions, assumptions, context and contextual limitations. Thus, these are termed warranted assertions where warrant is always a part of the assertions within pragmatism. In the light of these, the conditions under which the conclusions are drawn in this study are explicitly described in this research.

In addition, throughout the study, emphasis is placed on describing the internal and external context within which the phenomena unfolded. In fact, the internal and external contexts emerged as significant drivers for servitization in the TruckCo case study and accordingly these are discussed at length in Chapter 5.4.1.

Overall, the main finding of this study was to reveal that different offerings require different network configurations in terms of structures and relationships. However, the study took a step further to uncover that the customers' demand shaped the type of offerings which, in turn, defined the configuration of the network. In other words, customers – to a great extent – determined the structure and relationships of the network. In addition, it showed that as long as customers demand product-based offerings they will be provided by the manufacturers. These findings are examples of warranted assertions whereby the contextual limitations are expressed together with the results. Another example relates to the linkages between the contingencies and relationship dimensions. One of the notable findings of the study was the contention that the contingent characteristics of servitization (i.e. long-term relationships and service orientation) were not directly created but actually they were realised through the management of identified relationship attributes. To this end, the study provided a more nuanced and warranted description of the contingencies within the servitization literature, which depicts these contingencies as inherited within servitized offerings (Lockett et al., 2011; Martinez et al., 2010).

Another instance of warranted assertions is the conclusions pertaining to the performance outcomes of servitization; to date, the known studies on these outcomes have mainly focused on the positive outcomes (e.g. Oliva and Kallenberg, 2003; Wise and Baumgartner, 1999). Nevertheless, some scholars have shown that generating benefits through servitization is not a straightforward process and it was even shown that servitizing manufacturers have a higher risk of bankruptcy as opposed to traditional product-based manufacturers (Neely, 2008). To this end, the conclusions are provided together with the conditions under which servitization is likely to benefit the focal firm. In

line with Fang et al. (2008), it is shown that the conditions related to the maturity of the industry and the provisions of product related services were met within the focal case company, TruckCo. In addition, the findings also complied with the contention that the service revenues should account for at least 20-30% of the business for the focal firm in order to capitalise on services through servitization. Nevertheless, the findings contradict Fang et al.'s (2008) last condition that customer requirements of the industry should be volatile. In stark contrast, the trucking industry has historically been very conservative, preserving the engineering mindset. Recent years have seen some changes on the part of the customers but these were all considered to be a gradual or step change spanning years.

Overall, emphasis is placed on positioning the research phenomena within their contextual conditions and limitations. This is also followed throughout the conclusions by providing the identified warrants surrounding the assertions made. I believe this pragmatist research approach creates a realistic picture of servitization and the resultant implications on network structure and relationships.

6.4 Contributions of the Research

This study was set up to explore the implications of product and servitized offerings on the inter-organisational structure and relationships of a manufacturing network. To this end, four research questions were identified in the light of the reviewed literature. The first three research questions address three different but related areas of inquiry, whereas the fourth research question focuses on the linkages between these three main areas (i.e. offerings, network structures and relationships). In the broadest terms, this research contributes to the literature by providing a more nuanced description of what actually occurs within the network when a manufacturer provides servitized offerings in conjunction with other product-based offerings within the context of the trucking industry. In order to document these, the rest of the chapter is structured to clearly present the contributions in relation to each research question.

Contributions related to the Offerings (RQ1)

The case study revealed three discernible types of offering within the network of TruckCo. These were categorized as product-based offerings, product/service offerings and advanced offerings. In terms of total sales, these three offerings accounted for 40%, 50% and 10% respectively. The analysis of the findings in relation to the extant literature identified two main contributions which are:

1- Contrary to some extant servitization literature (i.e. Brax, 2005; Edvardsson et al., 2008; Oliva and Kallenberg, 2003), it can be argued that no radical transformation is evident for the provision of servitized offerings. I observed that the change towards servitization is anything but radical. Instead, it was observed as a gradual and incremental process. It was best described by a respondent from TruckCo "as an evolution rather than a revolution". In addition, the case study within its specific context shows that a significant percentage of customers were driven by a short-term, product-centric orientation. To this end, Gebauer et al. (2005) argue that theoretically the shift towards servitized offerings leads to higher revenues, yet in practice this requires a great deal of time and investment. This assertion was clearly evident in the case studied. This suggests that there is not a wholesale migration towards services, but products and servitized offerings can be sold in parallel and most importantly these depend on customers' demands. Furthermore, contrary to some extant marketing literature that advocates service as the dominant paradigm (cf. Vargo and Lusch, 2004), this study empirically shows that there is no dominant paradigm in the UK trucking industry but rather product, service or price are considered to be equally important.

2- The second is associated with the required customer imperatives for the offerings (RQ1). The results show that the customers of each offering differed in such a way that the customers of product offerings were driven by unit price, the customers of product/service offerings by services and the advanced offering customers by value. In other words, the customers of the three offerings had different priorities in terms of price, service and value. This was in line with earlier conceptualisations (Kowalkowski, 2011; Michel et al., 2008). By

providing rich and detailed evidence in a different industrial context, this study extends the servitization literature to provide the foundations for manufacturers to understand customers' requirements and related contextual drivers in order to effectively deliver the servitized offerings (Macdonald et al., 2011; Kowalkowski, 2011). In particular, manufacturers need to understand the key stakeholders such as the buyer, payer and user roles in the customer organisations (Kowalkowski, 2011) and accordingly attend to their needs in an efficient manner.

Contributions related to the Network Structures (RQ2)

In relation to the offerings, three network structures were identified in the case study. The discussion of the findings pertaining to the network structures resulted in a primary contribution which is underpinned by secondary contributions. These are detailed below.

The findings show that the product offerings had a dyadic structure whereas product/service offerings had a triadic structure and the advanced offerings had a tetradic network structure. The advanced offering had the most complex structure with four different actors in the network. Accordingly, the extant literature claims that product-based offerings are delivered through a dyadic structure (Hallen et al., 1991) whereas service-based offerings are argued to be delivered in a triadic structure (Bastl et al., 2012; Holma, 2009). Nevertheless, to my knowledge, a tetradic network structure has never been identified and studied in the servitization context. The main contention here is not to make generalisations to claim that all advanced offerings have a tetradic network structure. Instead what is shown here through the relationship between the offering types and the network structures is the contention that as the offerings move towards advanced servitized offerings the network becomes more complex in terms of its structure. This is the primary contribution of the study in relation to the network structures.

In addition, the literature on triads has historically (see Chapter 2.3.3) been divided into pure manufacturing (i.e. Choi et al., 2002; Dubois and Fredriksson,

2008; Philips et al., 1998; Rossetti and Choi, 2008) or pure service contexts (Holma, 2009; Li and Choi, 2009). This is the first known empirical study to investigate a three-tier triad in a servitization context. It can also be argued that this contribution extends the triadic IOR literature into the servitization domain. Previously, Bastl et al. (2012) investigated a two-tier triad (i.e. a manufacturer and two of its suppliers) in a servitization context.

Furthermore, the findings support the general contention of Gulati and Kletter (2005) who posit that as offerings move towards servitization all structures in the network shift towards partnerships based on close relationships. Thus, I argue that in the context of servitization, as the firms provide advanced servitized offerings, the structure of the network evolves into a horizontal structure. Within this structure, manufacturers move away from transactional relationships. The terms 'downstream' and 'upstream relationships' used in manufacturing supply chains (cf. Christopher, 2011) no longer apply to servitizing networks. Instead partnerships are established with customers, suppliers and other external firms. In terms of engaging in partnerships, an evident relationship bias on the part of TruckCo was observed whereby the partnerships with customers were viewed to be much more central as opposed to the partnerships with suppliers. This asymmetric relationship structure (cf. Oliver, 1990) was manifested in the TruckCo network and was equally applicable to all of the offerings studied.

Contributions for the Relationship Attributes (RQ3)

In line with the recent servitization literature (Lockett et al., 2011; Martinez et al., 2010; Tuli et al., 2007), this study empirically supports the notion that significant changes occur to IORs due to the introduction of servitized offerings. Here, the main contribution to the servitization literature is the identification of the key relationship attributes for different offerings. In the light of Cannon and Perreault's (1999) framework, the relationship attributes were identified as communication and knowledge for the information exchange dimension; support systems and preventative services for the operational linkages dimension; nature of contract for the legal bonds dimension; nature of the relationship for

the cooperative norms dimension; innovation for the buyer-seller adaptations dimension; and finally, range as an emergent attribute.

In relation to the offering types, the results show that communication based on price and product features emerged as the key attribute for the basic offering. Whereas for the product/service offering, a relational interaction was evident that was underpinned by communication, support systems, preventative services, and the nature of contract. On the other hand, the advanced offering had a far more integrated relationship driven by communication, knowledge, preventative services, and innovation.

In terms of contingencies, long-term relationships and service orientation attributes both emerged from the data in line with the extant literature (Lockett et al., 2011; Penttinen and Palmer, 2007; Windahl and Lakemond, 2006). In addition, the case study findings provided detailed insights in terms of the external contextual factors (cf. Windahl and Lakemond, 2006) that need to be considered for the network. In particular, the interplay between customers' demands and legislations (cf. Brady et al., 2005; Neely et al., 2011) was emphasized, which had significant implications on the formation of IORs.

In terms of outcomes, the analysis of the findings resulted in the identification of four key performance attributes in the TruckCo case study: business performance for revenue enhancing outcomes; operational performance for value enhancing outcomes; and both satisfaction and loyalty for sustained outcomes. The extant literature highlights manufacturer centric performance outcomes for servitization (Cohen et al., 2006; Oliva and Kallenberg, 2003; Wise and Baumgartner, 1999). However, the study showed the perception of performance shifts from manufacturer towards customers as the offerings moved towards advanced servitized offerings. In addition, for the basic offering, all the emergent performance attributes were related to the product and manufacturer. For the product/service offering performance was perceived as an amalgam of both product and service. However within this offering, in addition to TruckCo's performance, the network's performance was equally important. For the advanced offering, performance was perceived as the

customer's performance, and related performance discussions were based on the customer's business. In conclusion, the study contributed to the general understanding of the network relationships in servitization context by identifying the attributes, and exploring the manifestations of these attributes within the offerings.

Contributions related to the linkages between the offerings, structures and relationships (RQ4)

In essence, this research question is addressed through the synthesis of the conceptual framework with the emergent findings (see Figure 15). To this end, the conceptual framework was modified to accommodate the emergent assertions of the study. The modified framework is a representation of the linkages between the offerings, network structures and relationships These modifications are: 1) the inclusion of a tetradic structure; 2) the addition of the identified attributes to the relationship dimension; 3) insertion of the identified attributes to the outcomes; and 4) the illustration of the two dimensional links between the contingencies and relationship dimensions. In conclusion, the conceptual framework illustrates the interplay between the offerings, network structures and relationship attributes. Thus, this framework is considered the end-product of this research and can also be considered as a primary contribution to the extant servitization literature.

Overall, the findings of the case study resulted in at least one primary contribution for each of the research questions addressed. This can be considered as further evidence of the nascent state of the servitization literature related to IORs. In addition, it also shows that there are ample opportunities for future researchers who intend to investigate the implications of servitization on networks. These future research opportunities are discussed in Chapter 6.7.

However at this point, it is important to point out that the conclusions drawn from this study are based on a single, in-depth case study developed in one industrial context. Whilst this represents an appropriate approach given the exploratory nature of the study, further empirical investigation is needed across

different industries. Therefore, the conclusions made in this study are towards analytical generalizability (cf. Buchanan, 1999; Butler, 1997; Dyer and Wilkins, 1991; Mitchell, 1983). The limitations of the study are discussed in Chapter 6.6 in detail. However, the focus of the next chapter is on the managerial implications of the study. In the light of the contributions, there are a number of practical implications that can benefit managers in servitizing networks. These are discussed next.

6.5 Implications for Practice

This research showed that the IORs for servitized offerings are more complex from those of product offerings. The results of the case study provide further insights that could be relevant to managers of servitizing manufacturers in other industrial contexts.

The principal contention of this research is that managers need to be aware of different customer needs, related offerings and the resultant impact on the network structure and relationships. To this end, managers first need to understand the drivers behind the requirements of the customer. In so doing, extra care should be taken to understand the role of buyers, payers and users inside the customer organisation. This would enable manufacturers to customize the offering in accordance with the priorities of the decision makers in the customer organisation. Nevertheless, this cannot be achieved through the efforts of the manufacturer only. Also, managers at the customer organisation need to provide operational and political counselling in order to sustain the compatibility of the offering with the customer's priorities.

The case study findings also provide fresh and detailed insights in terms of the internal (e.g. customers' demands and legislation) and external contextual factors (e.g. leadership and technology) that need to be considered for the network. In particular, the interplay between customers' demands and legislations was emphasized and had significant implications on the IORs. For instance, the TruckCo case study showed the importance of both technology and legislation for servitization. Albeit these were out of the control of the

network, they played an influential role in shaping customers' demands. Thus, early identification and proactive management of such contextual factors could potentially distinguish the manufacturer from their competitors. In the case of TruckCo, the adoption of telematics technology and preparation for the EU carbon emission laws are prime examples of effectively anticipating and reacting to contextual factors. As such, the role of leadership is especially important for driving a proactive management approach towards these contextual factors.

In addition, the findings show that managers of the manufacturers do not only consider their own challenges but they also have an extensive understanding of those faced by other network partners. Nevertheless relationships with customers were seen to be much more central than those with suppliers. For the manufacturers, the most common challenge to engage suppliers with servitization was to align their business models to drive the right operational behaviours. In order to do so, TruckCo introduced a financial incentive and bonus system for suppliers based on service operations performance, whereby on the condition that the desired service performance is achieved for the customer, the suppliers receive extra financial benefits. This was seen by many suppliers (i.e. dealers) as the main driver to achieve the required service performance. Such initiatives also underline the importance of a win-win mentality required for a servitizing network.

On a further note, this study shows that contingent characteristics of servitization (i.e. long-term relationships and service orientation) cannot be directly achieved but they are actually realised through the relationship attributes. Managers can potentially focus on the identified relationship attributes in order to drive the appropriate behaviour for the particular offering. In terms of the traditional product-based offerings, for instance, managers need to focus on communication attributes which are driven by price and product features. On the other hand, for product/service offerings, there is a need to place emphasis on communication, support systems, preventative services and on the nature of the contract. It is important to point out that the contract is

central to product/service offerings but for advanced servitized offerings it is rarely mentioned. Thus, managers should be aware that IORs spanning the product/service offerings are primarily driven by contract and therefore they need to place extra emphasis on the content of the contract. In stark contrast, for advanced servitized offerings, a different picture emerges in relation to the contracts. Here, the formal contractual arrangements are complemented by relational mechanisms in which the relationship between the customer and manufacturer is based on a working partnership. Thus for this offering, managers on both sides of the organisational interfaces should make extra resources available in order to accommodate the increased breadth and depth of communication. In addition, the advanced offering has a far more integrated relationship driven by communication, knowledge, preventative services, and innovation. Furthermore, it is important to point out that the study showed the perception of performance shifts from manufacturer towards customers as the offerings move towards advanced servitized offerings. For advanced servitized offerings, performance discussions were perceived in terms of cost savings for customer's business. To this end, performance should be viewed from the customer's perspective for these offerings.

Overall, managers need to be aware that the provision of servitization involves the participation of all network members. This was evident for in TruckCo case study which involved all the organisations in the ego-network (i.e. first tier suppliers, customers and partners). Accordingly, servitization had significant implications on the relationships with those network members. In conclusion, managers need to be conscious of the interplay between the relationship attributes as well as the internal and external contextual factors in order to achieve the desired outcomes through servitization.

6.6 Limitations

Naturally, this study is not without limitations. It is based on a single, in-depth case study developed in one industrial context. Whilst this represents an

appropriate approach given the exploratory nature of the study, further empirical investigation is needed across different industries. Therefore, any claims on generalizing the findings must be made with caution.

In a single case study, the selection of the case is of paramount importance to the research process since the data is entirely based on the case selected. For this research, access to other network members including the customers and suppliers were also necessary in order to investigate the network structures and relationships pertaining to servitization. This provided certain difficulties in terms of access. Especially access to customers was a delicate issue for manufacturers. Therefore, various attempts for access failed since manufacturers were reluctant to grant access to their supply network. The attempts finally materialised with case company, TruckCo and the necessary access was granted to carry out this research. Naturally, this company fulfilled all of the related criteria for case selection. Nevertheless, I concur with Pettigrew (1990) who argues that although there is an element of intention and design in case selection, the actual process can best be described a 'planned opportunism'. Therefore, it is important to point out again that this study is only based on a servitizing network in one industrial context.

In addition, this study only looked at the ego-network of a manufacturer spanning the first tier relationships. The second tier suppliers are not considered in the study. Thus the data collection did not include these organisations. This was partly because the offerings did not interact directly with these organisations. In addition, such an approach would have required significant time and resources which would not have been entirely feasible for a single individual based research.

Another limitation was related with the methodological approach chosen for the study. This research used an abductive research approach which was underpinned by pragmatism. An abductive research approach dictates a continuous iteration to be made between emerging data and theoretical framework. This approach to the case study design was deemed appropriate due to the exploratory nature of the research objective and questions. It also

contributed to the trustworthiness of the study. Nevertheless there are only a very limited number of available sources that can be used as a guide for designing abductive studies (cf. Kovács and Spens, 2005). In particular, a structured approach for case study design is not established that can aid the researchers to demonstrate the abductive research process especially in terms of the changes occurring due to the movement between theory and data. To this end, there is an emerging need for further research in terms of developing the methodological aspects of abductive research. The next section discusses further avenues of research that are identified as a result of this doctoral thesis.

6.7 Avenues for Future Research

This thesis resulted in a number of contributions centred on the main areas of inquiry. An emergent conclusion is that servitization literature related to IORs is at an infant stage. Thus, this research area is full of potential for further research. This thesis, by its exploratory nature, can serve as a foundation upon which future research can be built. With this in mind, future research directions are indicated in the following paragraphs.

The extant servitization literature has predominantly focused on predetermined relationships. In the marketing domain, the customer-manufacturer relationships have been investigated (e.g. Macdonald et al., 2011; Tuli et al., 2007) whereas in the operations management domain, the focus has been on the manufacturer-supplier relationship (e.g. Bastl et al., 2012; Martinez et al., 2010; Lockett et al., 2011). However, extant research also argued that there is a need to examine the broader network by considering the value creation process for servitized offerings (Matthyssens and Vandenbempt, 2008; Ulaga and Eggert, 2006; Windahl and Lakemond, 2006). To this end, this research adopted a network approach that identified all the significant relationships related to the provision of offerings in the context of the study. Nevertheless, all of the identified relationships were parts of the ego-network of the manufacturer. In other words, all the external organisations in the study were directly connected to the manufacturer which means that second or third tier suppliers were not

considered in the study. It would be interesting to examine the ramifications of servitization on these second or third tier suppliers. In particular an exploratory case study could be conducted to investigate to what extent servitization impacts on a network. What is the extent of servitization in a manufacturing network? Is it bounded by first tier suppliers and/or customers? To my knowledge, there has not been an empirical study that addresses these questions.

A potential extension of this thesis is to conduct multiple case studies in other industrial contexts in order to understand the extent to which the findings correlate. In particular, the conceptual research framework proposed in this thesis can potentially be used a tool to compare and contrast the emergent findings. Accordingly, the investigation of different industries could also be followed by studies conducted outside the UK. Recently, Neely et al. (2011) studied a large database of global manufacturing which showed that between 2007 and 2011, the percentage of servitizing manufacturers dramatically increased from 1% to 20%. As a result, the authors concluded "[…] it is clear that Chinese manufacturers intend to move up the value chain just as manufacturers in developed economies do" (Neely et al., 2011 p. 6). In the light of these points, it would be interesting to see studies from emerging economies especially pertaining to the network aspects of servitization.

In relation to the offerings, the TruckCo case study identified three main offerings. Tukker's (2004) classification identifies four different offerings when product offerings are also included. The result-based offering which is the fourth type of Tukker's (2004) classification was not evident within TruckCo's industry. In fact, in the literature this type of offering is predominantly studied in the aerospace and defence industries (e.g. Baines et al., 2009a; Bastl et al., 2012; Pawar et al., 2009). Therefore, future studies can investigate the implications of these offerings on the network structure and relationships in order to compare the emerging findings with the results of this thesis.

In addition, another potential for future research is associated with the identified relationship attributes in terms of contingencies, relationship dimensions and

outcomes. This research was focused on the linkages between these three areas collectively. For instance, the linkage between communication and business performance was not individually investigated since this was not the main focus of the study. It might be interesting, therefore, to quantitatively investigate the linkages amongst these attributes by collecting data from a larger population of manufacturers. This research has identified a number of attributes for different dimensions which could provide the attributes for scale development and testing. Further research can focus on specific dimensions such as the linkages between the relationship dimensions and performance outcomes. Furthermore, the mediating or moderating effect of internal and external contextual factors could potentially be an interesting area for further investigation.

6.8 Summary of the Conclusion Chapter

Chapter 6 served as the final concluding chapter. The chapter started with the presentation of the research problem and, research questions were reinstated at the end of Section 6.2. In Section 6.3, the manifestations of pragmatism within the research process are outlined. Next in Section 6.4 the contributions of the research pertaining to each of the research questions are emphasized. And finally these are followed by practical implications, limitations and avenues for future research in Sections 6.5, 6.6 and 6.7.

REFERENCES

Adams, W. and Yellen, J. (1976), “Commodity bundling and the burden of monopoly”, *Quarterly Journal of Economics*, Vol. 90, pp. 475-498.

Anderson, E. and Weitz, B. (1992), “The Use of Pledges to Build and Sustain Commitment in Distribution Channels”, *Journal of Marketing Research*, Vol. 29, No. 1, pp. 18-34.

Anderson, J. and Narus, J. (1995), “Capturing the value of supplementary services”, *Harvard Business Review*, Vol. 73, No. 1, pp. 75-83.

Anderson, J.C., Narus, J.A., and van Rossum, W. (2006), “Customer value propositions in business markets”, *Harvard Business Review*, Vol. 84, No. 3, pp. 91-99.

Anderson, J.C. and Narus, J.A. (1984), “A Model of the Distributor’s Perspective of Distributor-Manufacturer Working Relationships”, *Journal of Marketing*, Vol. 48, No. 4, pp. 62-74.

Anderson, J.C. and Narus, J.A. (1990), “A Model of Distributor Firm and Manufacturer Firm Working Partnerships”, *Journal of Marketing*, Vol. 54, No. 1, pp. 42-58.

Araujo, L., Dubois, A. and Gadde, L.-E. (2003), “The multiple boundaries of the firm”, *Journal of Management Studies*, Vol. 40, No. 5, pp. 1255-77.

Armistead, C. and Clark, G. (1991), “A framework for formulating after-sales support strategy”, *International Journal of Operations & Production Management,* Vol. 11, No. 3, pp. 111-24.

Aurich, J.C., Fuchs, C. and Wagenknecht, C. (2006), “Life cycle oriented design of technical Product-Service Systems”, *Journal of Cleaner Production*, Vol. 14, No. 17, 1480-1494.

Axelsson, B. and F. Wynstra (2002), *Buying Business Services*, Wiley, Chichester, UK.

Baines, T.S., Lightfoot, H.W., Evans, S., Neely, A., Greenough, R., Peppard, J., Roy, R., Shehab, E., Braganza, A., Tiwari, A., Alcock, J.R., Angus, J.P., Bastl, M., Cousens, C., Irving, P., Johnson, M., Kingston, J., Lockett, H., Martinez, V., Michele, P., Tranfield, D., Walton, I.M. and Wilson, H. (2007), "State-of-the-art in product-service systems", *Proceedings of the Institution of Mechanical Engineers - Part B - Engineering Manufacture*, Vol. 221, No. 1, pp. 1543-1552.

Baines, T.S., Lightfoot, H., Peppard, J., Johnson, M., Tiwari, A., Shehab, E. and Swink, M. (2009a), "Towards and operations strategy for product-centric servitization", *International Journal of Operations & Production Management*, Vol. 29, pp. 494-519.

Baines, T.S., Lightfoot, H.W., Benedettini, O. and Kay, J.M. (2009b), "The servitization of manufacturing: A review of literature and reflection on future challenges", *Journal of Manufacturing Technology Management,* Vol. 20 No. 5, pp. 547-567.

Ballantyne, D. and Varey R. (2006), "Introducing a dialogical orientation to the service-dominant logic of marketing", in Vargo, S. and Lusch, R. (Eds.), *The service-dominant logic of marketing: dialog, debate, and directions,* ME Sharpe, Armonk, NY, USA, pp. 224-235.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management,* Vol. 17, No. 1, pp. 99-120.

Barringer, B.R. and Harrison, J.S. (2000), "Walking a tightrope: creating value through interorganizational relationships", *Journal of Management*, Vol. 26, No. 3, pp. 367-403.

Barthélemy, J. and Quélin, B.V. (2006), "Complexity of outsourcing contracts and ex post transaction costs: an empirical investigation", *Journal of Management Studies*, Vol. 43, pp. 1775-1797.

Bastl, M., Johnson, M., Evans, S. and Lightfoot, H. (2012), "Buyer-Seller relationships in a servitized environment: an examination with Cannon and Perreault's framework", *International Journal of Operations & Production Management,* Vol. 32, No. 6, pp. 650-675.

Belvedere, V., Grando, A., and Bielli, P. (2013), “A quantitative investigation of the role of information and communication technologies in the implementation of a product-service system”, *International Journal of Production Research,* Vol. 51, No. 2, pp. 410-426.

Berry, D., Naim, M.M. and Towill, D.R. (1995), “Business process re-engineering an electronic products supply chain”, *IEE Proceedings – Science, Measurement and Technology*, Vol. 142, No. 5, pp. 395-403.

Blau, P.M. (1964), *Exchange and Power in Social Life*, Wiley, New York.

Blois, K.J. (1996), “Relationship Marketing in Organizational Markets: When Is It Appropriate”, *Journal of Marketing Management,* Vol. 12, pp. 43-57.

Bourne, M.C.S. (1999), “Performance measurement system design: testing a process approach in manufacturing companies”, *International Journal of Business Performance Measurement*, Vol. 1, No. 2, pp. 154-170.

Bourne, M., Kennerley, M. and Franco-Santos, M. (2005), “Managing through measures: a study of impact on performance”, *Journal of Manufacturing Technology Management*, Vol. 16, No. 4, pp. 373-395.

Boyer, K.K. and Swink, M.L. (2008), “Empirical Elephants – Why Multiple Methods are Essential to Quality Research in Operation and Supply Chain Management”, *Journal of Operations Management*, Vol. 26, No. 3, pp. 337-348.

Boyles, D. (2006), “Dewey’s Epistemology: an Argument for Warranted Assertions, Knowing, and Meaningful Classroom Practice”, *Educational Theory,* Vol. 56. No. 1, pp. 57-68.

Brady, T., Davies, A. and Gann, D.M. (2005), “Creating value by delivering integrated solutions”, *International Journal of Project Management,* Vol. 23, No. 5, pp. 360-365.

Brandstötter, M., Haberl, M., Knoth, R., Kopacek, B., Kopacek, P. (2003), “IT on demand towards an environmental conscious service system for Vienna”, in *Proceedings of EcoDesign ’03: Third International Symposium on Environmentally Conscious Design and Inverse Manufacturing in Tokyo, Japan, 2007,* pp. 799-802.

Brax, S. (2005), “A manufacturer becoming service provider – challenges and a paradox”, *Managing Service Quality*, Vol. 15, No. 2, pp. 142-55.

Brennan, R. and Canning, L. (2002), “Adaptation Processes in Supplier-Customer Relationships”, *Journal of Customer Behavior,* Vol. 1, Iss. June, pp. 117-144.

Brent, J. (1993), *Charles Sanders Peirce: A Life,* Indiana University Press, Bloomington, Indiana.

Bromley, D.W. (2008), “Volitional Pragmatism”, *Ecological Economics,* Vol. 68, No. 1-2, pp. 1-13.

Bryman, A. (2006), “Integrating quantitative and qualitative research: how is it done?”, *Qualitative Research*, Vol. 6, No. 1, pp. 97-113.

Bryman, A. (2012), *Social Research Methods*, 4th Edition*,* Oxford University Press, Oxford.

Buchanan, D.A. (1999), “The logic of political action: an experiment with the epistemology of the particular”, *British Journal of Management*, Vol. 10, pp. 73-88.

Burgess, K., Singh, P.J. and Koroglu, R. (2006), “Supply chain management: a structured literature review and implications for future research”, *International Journal of Operations and Production Management*, Vol. 26, No. 7, pp. 703-729.

Burnstein, M.L. (1960), “The economics of tie-in sales”, *Review of Economics and Statistics*, Vol. 42, pp. 68-73.

Burt, R.S. (1992), *Structural Holes: The Social Structure of Competition*, Harvard University Press, Cambridge, MA.

Butler, R. (1997), “Stories and Experiments In Social Inquiry”, *Organization Studies*, Vol. 12, No. 6, pp. 927-48.

Campbell, J. (1995), *Understanding John Dewey,* Open Court, Chicago, Illinois.

Canning, L. and Hammer-Lloyd, S. (2002), “Managing the adaptation process in interactive business relationships”, *The Journal of Business and Industrial Marketing,* Vol. 17, No. 7, pp. 615-636.

Cannon, J.P. and Perreault, W.J.D. (1999), “Buyer-seller relationships in business markets”, *Journal of Marketing Research*, Vol. 36, No. 4, pp. 439-460.

Caplow, T. (1956), “A theory of coalitions in the triad”, *American Journal of Sociology*, Vol. XXI, pp. 489-493.

Caplow, T. (1968), *Two against one: Coalitions in Triads*, Prentice-Hall, New Jersey.

Centre for Sustainable Design (2002), “Sustainable service systems (3S)”, paper presented at *Transition towards sustainability Sixth International Conference*, De Rode Hoed, Amsterdam,

Charmaz, K. (2000), “Grounded Theory: Objectivist and Constructivist Methods”, in Denzin, N.K. and Lincoln Y.S. (eds), *Handbook of Qualitative Research,* 2nd ed*,* Thousand Oaks, Sage, California, pp. 509-535.

Chase, R.B. and Apte, U.M. (2007), “A history of research in service operations: What's the big idea?”, *Journal of Operations Management*, Vol. 25, No. 2, pp. 375-386.

Cherryholmes, C.C. (1992), “Notes on pragmatism and scientific realism”, *Educational Researcher*, Vol. 21, pp. 13-17.

Chesbrough, H. (2006), *Open Business Models: How to Thrive in the New Innovation Landscape*, Harvard Business School Press, Boston, USA.

Choi, T.Y. and Wu, Z. (2009a), “Taking the leap from dyads to triads: Buyer–supplier relationships in supply networks”, *Journal of Purchasing and Supply Management*, Vol. 15, No. 4, pp. 263-266.

Choi, T.Y. and Wu, Z. (2009b), “Triads in supply networks: Theorizing buyer–supplier–supplier relationships”, *Journal of Supply Chain Management,* Vol. 45, No. 1, pp. 8-25.

Choi, T.Y. and Wu, Z. (2009c), “Go ahead, leap: Triads and their practical and theoretical importance; In response to ‘To leap or not to leap: Triads as arbitrary subsets of networks of connected dyads’ by Anna Dubois”, *Journal of Purchasing and Supply Management*, Vol. 15, No. 4, pp. 269-270.

Choi, T.Y., Ellram, L.M. and Koka, B.R. (2002), “Supplier-Supplier Relationships and Their Implications for Buyer-Supplier Relationships”, *IEEE Transactions on Engineering Management*, Vol. 49, No. 2, pp.119-130.

Christopher, M. (1992), *Logistics and Supply Chain Management: Strategies for Reducing Cost & Improving Services*, Pitman, London.

Christopher, M. (2011), *Logistics and Supply Chain Management,* 4th edition, Financial Times, Prentice Hall, UK.

Cohen, M.A., Agrawal, N. and Agrawal, V. (2006), “Winning in the Aftermarket”, *Harvard Business Review*, Vol. 84, No. 5, pp. 129-138.

Cohen, M., and Whang, S. (1997), “Competing in product and service: A product life-cycle model”, *Management Science*, Vol. 43, No. 4, pp. 535-545.

Cova, B. and Salle, R. (2008), “Marketing solutions in accordance with the S-D logic: Co-creating value with customer network actors”, *Industrial Marketing Management*, Vol. 37, No. 3, pp. 270-277.

Creswell, J.W. (2009), *Research Design: Qualitative, Quantitative, and Mixed Methods Approach*, Sage, Thousand Oaks, CA.

Davies, A. (2003), “Integrated solutions: the changing business of systems integration”, in Davies, A., Hobday, M. and Prencipe, A. (eds), *The Business of Systems Integration*, Oxford University Press, Oxford, pp. 333-373.

Davies, A. (2004), “Moving base into high-value integrated solutions: a value stream approach”, *Industrial & Corporate Change*, Vol. 13, pp. 727-775.

Davies, A., Brady, T. and Hobday, M. (2006), “Charting a path toward integrated solutions”, *MIT Sloan Management Review*, Vol. 47, No. 3, pp. 39-48.

Davies, A., Brady, T. and Hobday, M. (2007), “Organizing for solutions: systems seller vs. systems integrator”, *Industrial Marketing Management*, Vol. 36, pp. 183-193.

Davies, A., Brady, T. and Tang, P. (2003), “Delivering integrated solutions”, *Brighton: SPRU-CENTRIM*, pp. 1-34.

Davenport, T.A., Harris, J.G., De Long, D.W., and Jacobson, A.L. (2001), “Data to knowledge to results: Building an analytical capability”, *California Management Review*, Vol. 43, No. 2, pp. 117-138.

Defee, C.C., Williams, B., Randall, W.S. and Thomas, R. (2010), "An inventory of theory in logistics and SCM research", *International Journal of Logistics Management*, Vol. 21, No. 3, pp. 404-89.

Delbridge, R. (2003), “Knowledge, Innovation and Institutional Change”, *Work, Employment and Society*, Vol. 17, No. 1, pp. 187-96.

Denzin, N.K. and Lincoln, Y.S. (2005), *The SAGE Handbook of Qualitative Research*, Sage Publications, Thousand Oaks, CA.

Department for Transport (2003), *Best Practice Guide No. 341 ‘Telematics Guide’ Transport Energy Best Practice*, London, UK.

Department for Business, Enterprise and Regulatory Reform (BERR) (2008), *Manufacturing: New Challenges, New Opportunities*, London, UK.

Department of Business Innovation and Skills (BIS), (2010), *Manufacturing in the UK: Supplementary analysis*, London, UK.

Desmet, S., Van Dierdonck, R. and Van Looy, B. (1998), “Servitisation: the blurring boundaries between manufacturing and services”, in B. Van Looy, R. Van Dierdonck and P. Gemmel (eds.), *Services Management: An Integrated Approach*, Pitman Publishing, London, pp. 33-44.

Dewey, J. (1910), *How We Think*, Heath, Boston, D.C.

Dewey, J. (1938), *Logic: The Theory of Inquiry,* Holt, Rinehart, New York.

Dubois, A. and Fredriksson, P. (2008), “Cooperating and competing in supply networks: Making sense of a triadic sourcing strategy”, *Journal of Purchasing and Supply Management*, Vol. 14, No. 3, pp. 170-179.

Dubois, A. and Gadde, L.E. (2002), “Systematic combining: an abductive approach to case research”, *Journal of Business Research*, Vol. 55, pp. 553-560.

Dwyer, F.R., Schurr, P.H. and Oh, S. (1987), “Developing Buyer-Seller Relationships”, *Journal of Marketing*, Vol. 51, No. 2, pp. 11-27.

Dyer, J.H. and Singh, H. (1998), “The relational view: Cooperative strategy and sources of inter organizational competitive advantage”, *Academy of Management Review*, Vol. 23, No. 4, pp. 660-679.

Dyer, W.G. and Wilkins, A.L. (1991), “Better stories, not better constructs, to generate a better theory: a rejoinder to Eisenhardt”, *Academy of Management Review*, Vol. 16, pp. 613-19.

Easterby-Smith, M., Thorpe, R. and Jackson, P. (2008), *Management Research*, Sage Publications, London.

Easton, G. (1995), “Case research as a methodology for industrial networks: a realist apologia”, in *Proceedings from the 11th IMP Conference, Manchester Federal School of Business and Management in Manchester Federal School of Business and Management, 2007,* pp. 368-391.

Edmondson, A.C. and McManus, S.E. (2007), “Methodological Fit in Management Field Research”, *Academy of Management Review*, Vol. 32, No. 4, pp. 1155-1179.

Edvardsson, B., Holmlund, M. and Strandvik, T. (2008), “Initiation of business relationships in service-dominant settings”, *Industrial Marketing Management*, Vol. 37, No. 3, pp. 339-350.

Eggert, A. and Helm, S. (2003), “Exploring the Impact of Relationship Transparency on Business Relationships: A Cross Sectional Study Among Purchasing Managers in Germany”, *Industrial Marketing Management*, Vol. 32, No. 2, pp. 101-108.

Ehret, M. (2004), “Managing the trade-off between relationships and value networks: Towards a value-based approach of customer relationship management in business-to-business markets”, *Industrial Marketing Management*, Vol. 33, No. 6, pp. 465-473.

Eisenhardt, K.M. (1989), “Building Theories from Case Study Research”, *Academy of Management Review*, Vol. 14, No. 4, pp. 532-550.

Ellram, L. (1996), “The Use of the Case Study Method in Logistics Research”, *Journal of Business Logistics*, Vol. 17, No. 2, pp. 93-138.

Emerson, R.M. (1976), “Social exchange theory”, *Annual Review of Sociology*, Vol. 2, pp. 335-62.

Erlandson, D.A., Harris, E.K., Skipper, B.L. and Allen, S.D. (1993), *Doing Naturalistic Inquiry: A guide to methods,* Sage Publications, Newbury Park, CA.

Fang, E., Palmatier, R.W. and Steenkamp, J.E.M, (2008) “Effect of Service Transition Strategies on Firm Value”, *Journal of Marketing*, Vol. 72, No. 5, pp. 1-14.

Flint, D.J. and Mentzer, J.T. (2000), “Logisticians as marketers: their role when customers’ desired value changes”, *Journal of Business Logistics*, Vol. 21, No. 2, pp. 19-45.

Flint, D.J., Woodruff, R.B. and Gardial, S.F. (1997), “Customer value change in industrial marketing relationships: a call for new strategies and research”, *Industrial Marketing Management*, Vol. 26, pp. 163-75.

Flint, D.J., Woodruff, R.B. and Gardial, S.F. (2002), “Exploring the phenomenon of customers’ desired value change in a business-to-business context”, *Journal of Marketing*, Vol. 66, No. 4, pp. 102-17.

Flynn, B.B. (2008), “Having It All: Rigor versus Relevance in Supply Chain Management Research”, *Journal of Supply Chain Management*, Vol. 44, No. 2, pp. 63-67.

Flyvbjerg, B. (2006), “Five Misunderstandings about Case-Study Research”, *Qualitative Inquiry*, Vol. 12, No. 2, pp. 219-245.

Foote, N.W., Galbraith, J., Hope, Q. and Miller, D. (2001), “Making Solutions the Answer”, *McKinsey Quarterly*, No.3, pp. 84-93.

Ford, D. (1980), “The Development of Buyer-Supplier Relationships in Industrial Markets”, *European Journal of Marketing*, Vol. 14, No. 5/6, pp. 339-353.

Ford, D., Gadde, E., Håkansson, H. and Snehota, I. (1998), *Managing business relationships*, Chichester, John Wiley & Sons, UK.

Frambach, R.T., Welslips, I. and Gundlach, A. (1997), “Proactive product service strategies – an application in the European health market”, *Industrial Marketing Management*, Vol. 26, No. 4, pp. 341-52.

Frankel, R., Bolumole, Y.A., Eltantawy, R.A., Paulraj, A. and Gundlach, G.T. (2008), “The domain and scope of SCM’s foundational disciplines – insights and issues to advance research”, *Journal of Business Logistics*, Vol. 29, No. 1, pp. 1-30.

Galbraith, J.R. (2002), “Organizing to deliver solutions”, *Organizational Dynamics*, Vol. 31, No. 2, pp. 194-207.

Galbraith, J.R. (2005), *Designing the customer-centric organization*, Jossey-Bass, San Francisco, CA.

Gebauer, H. and Friedli, T. (2005), “Behavioural implications of the transition process from products to services”, *Journal of Business & Industrial Marketing*, Vol. 20, No. 2, pp. 70-80.

Gebauer, J., Fleisch, E. and Freidli, T. (2005), “Overcoming the service paradox in manufacturing companies”, *European Management Journal*, Vol. 23, No. 1, pp. 14-26.

Geertz, C. (1973), *The Interpretation of Cultures*, Basic Books, New York.

Gentry, J.J. (1996), “Carrier involvement in buyer-supplier strategic partnerships”, *International Journal of Physical Distribution and Logistics Management*, Vol. 26, No. 3, pp. 14-25.

Gerstner, L.V. (2002), *Who said elephants can't dance? Inside IBM's historic turnaround*, Harper Collins Publishers, London.

Glaser, B.G. and Strauss, A.L. (1967), *The Discovery of Grounded Theory,* Aldine, Chicago, IL.

Goedkoop, M., van Haler, C., te Riele, H. and Rommers, P. (1999), "Product service-systems, ecological and economic basics", Report for Dutch Ministries of Environment (VROM) and Economic Affairs (EZ), Amsterdam.

Goffin, K. and New, C. (2001), "Customer support and new product development - an exploratory study", *International Journal of Operations and Production Management,* Vol. 21, No. 3, pp. 275-301.

Goffin, K., Raja, J.Z., Claes, B., Szwejczewski M., and Martinez V. (2012), "Rigor in qualitative supply chain management research—Lessons from applying repertory grid", *International Journal of Physical Distribution & Logistics Management* Vol. 42 No. 9.

Ghoshal, S. and Moran, P. (1996), "Bad for practice: A critique of the transaction cost theory", *Academy of Management Review,* Vol. 21, pp. 13-48.

Gouinlock, J. (2000), "John Dewey (1859-1952)", in *Concise Routledge Encyclopedia of Philosophy,* Routledge, New York, NY, pp. 207.

Green, S.D., Kao, C. and Larsen, G.D. (2010), "Contextualist research: Iterating between methods while following an empirically grounded approach", *Journal of Construction Management and Engineering*, Vol. 136, No. 1, pp. 117-126.

Greer, B.M. and Ford, M.W. (2009), "Managing change in supply chains: a process comparison", *Journal of Business Logistics*, Vol. 30, No. 2, pp. 47-63.

Griffin, A. and Hauser, J.R. (1993), "The Voice of the Customer", *Marketing Science*, Vol. 12, No. 1, pp. 1-27.

Guba, E. and Lincoln, Y.S. (1989), *Fourth Generation Evaluation*, Sage Publications, Newbury Park. CA.

Gulati, R. and Kletter, D. (2005), "Shrinking Core, Expanding periphery: The relational architecture of high-performing organizations", *California Management Review*, Vol. 47, pp. 77-104.

Gundlach, G.T. and Murphy, P.E. (1993), “Ethical and legal foundations of relational marketing exchanges”, *Journal of Marketing*, Vol. 57, No. 4, pp. 35-46.

Håkansson, H. and Snehota, I. (1989), “No business is an island: The network concept of business strategy”, *Scandinavian Journal of Management*, Vol. 5, No. 3, pp. 187-200.

Håkansson, H. and Snehota, I. (eds.) (1995), *Developing relationships in business networks*, International Thomson Press, Boston.

Håkansson, H. (ed.) (1982), *International Marketing and Purchasing of Industrial Goods: An Interaction Approach*, John Wiley & Sons, Chichester, UK.

Halldórsson, A. and Aastrup, J. (2003), “Quality criteria for qualitative inquiries in logistics”, *European Journal of Operational Research*, Vol. 144, pp. 321-332.

Hallén, L. and Sandström, M. (1991), “Relationship Atmosphere in International Business”, in Paliwoda, S.J. (ed.), *New Perspectives on International Marketing*, Routledge, London.

Hallén, L., Jan J. and Nazeem, S-M. (1991), “Interfirm Adaptation in Business Relationships,” *Journal of Marketing*, Vol. 55, pp. 29-37.

Harbison, J.R. and Pekar, P. (1998), *Smart Alliances: A Practical Guide to Repeatable Success*, Jossey-Bass, San Francisco, USA.

Havila, V. (1996), *International Business-Relationship Triads, A study of the changing role of intermediating actor*, Doctoral Thesis, Department of Business Studies, Uppsala University, Uppsala, Sweden.

Heide, J.B. (1994), “Interorganizational Govemance in Marketing Channels”, *Journal of Marketing*, Vol. 58 (January), pp. 71-85.

Heide, J.B. and John, G. (1992), “Do Norms Matter in Marketing Relationships”, *Journal of Marketing*, Vol. 56, No. 2, pp. 32-44.

Helper, S. and Levine, D. I. (1992), “Long-term supplier relations and product-market structure”, *Journal of Law, Economics & Organization*, Vol. 8, No. 3, pp. 561-582.

Hirschman, E.C. (1986), “Humanistic inquiry in marketing research: philosophy, method, and criteria”, *Journal of Marketing Research*, Vol. 23, No. 3, pp. 237-49.

Hockerts, K. (1999), “Eco-efficient service innovation: increasing business - ecological efficiency of products and services”, in Charter, M. (ed.) *Greener Marketing: a global perspective on greener marketing practice,* Greenleaf Publishing, Sheffield.

Holma, A. (2008), “Adapting to changing buying behaviour: A challenge for relationship management”, paper presented at *Annual IMP Conference,* Uppsala University, Sweden.

Holma, A. (2009), *Adaptation in Triadic Business Relationship Settings*, Doctoral Thesis, Department of Marketing, Hanken School of Economics, Vaasa, Finland.

Hookway, C. (2000), “Charles Sanders Peirce (1839-1914)”, in *Concise Routledge Encyclopedia of Philosophy,* Routledge, New York, NY, pp. 663-664.

Houser, N. and Kloesel, C.J.W. (1992), *The Essential Peirce: Selected Philosophical Writings (1867-1893),* Indiana University Press, USA.

Hutt, M.D. and Speh, T.W. (2001), *Business Marketing Management*, Harcourt College Publishing, Fort Worth, TX.

Hyde, K.F. (2000), “Recognising deductive processes in qualitative research”, *Qualitative Market Research: An International Journal*, Vol. 3, No. 2, pp. 82-90.

Järvensivu, T. and Törnroos, J.A. (2010), “Case study research with moderate constructionism: Conceptualization and practical illustration”, *Industrial Marketing Management,* Vol. 39, No. 1, pp. 100-108.

Johanson, J. and Mattsson, L.G. (1987), “Interorganizational relations in industrial systems: A network approach compared with the transaction cost

approach", *International Studies of Management and Organization*, Vol. 17, No. 1, pp. 34-48.

Johansson, J.E., Krishnamurthy, C. and Schlissberg, H.E. (2003), "Solving the Solutions Problem" *McKinsey Quarterly*, Vol. 3, pp. 116-125.

Johnsen, T., Howard, M. and Miemczyk, J. (2009), "UK defence change and the impact on supply relationships", *Supply Chain Management: An International Journal*, Vol. 14, No. 4, pp. 270-9.

Johnson, M. and Mena, C. (2008), "Supply Chain Management for Servitized products: A multi-industry case study", *International Journal of Production Economics*, Vol. 114, No. 1, pp. 27-39.

Johnson, M.D., Herrmann, A. and Bauer, H.H. (1999), "The effects of price bundling on consumer evaluations of product offerings", *International Journal of Research in Marketing*, Vol. 16, No. 2, pp. 129-42.

Johnson, R.B., and Onwuegbuzie, A.J. (2004), "Mixed methods research: a research paradigm whose time has come", *Educational Researcher*, Vol. 33, No.7, pp. 14-26.

Johnstone, S., Dainty, A. and Wilkinson, A. (2009), "Integrating products and services through life: an aerospace experience", *International Journal of Operations & Production Management*, Vol. 29, No. 5, pp. 520-538.

Kindstrom, D. (2009), *Creating business out of industrial offerings*, MTC, Stockholm, Sweden.

King, N. (1998), "Template analysis", in G. Symon and C. Cassell (eds), *Qualitative methods and analysis in organizational research: a practical guide*, Sage Publications, London.

King, N. (2004), "Using Templates in the Thematic Analysis of Texts", in Cassell, C. and Symon, G. (eds), *Essential Guide to Qualitative Methods in Organizational Research*, Sage Publications, London, pp. 256-270.

Kogut, B. and Zander, U. (1992), “Knowledge of the Firm, Combinative Capabilities and the Replication of Technology”, *Organization Studies*, Vol. 3, pp. 383-97.

Kovács, G. and Spens, K.M. (2005), “Abductive reasoning in logistics research”, *International Journal of Physical Disctribution & Logistics Management,* Vol. 35, No. 2, pp. 132-144.

Kowalkowski, C. (2011), “Dynamics of value propositions: insights from service-dominant logic”, *European Journal of Marketing*, Vol. 45, No. 1/2, pp. 277-94.

Kraljic, P. (1983), “Purchasing must become supply management”, *Harvard Business Review*, Vol. 61, No. 5, pp. 109-17.

Kumar, N. (2004), *Marketing as Strategy: Understanding the CEO’s Agenda for Driving Growth and Innovation,* Harvard Business School Press, Boston.

Lambert, D., Croxton, K., Rogers, D. and Garcia-Dastugue, S. (2006) “The Returns Management Process”, in Lambert D. (ed), *Supply Chain Management: Processes, Partnerships, Performance,* 2nd ed, Supply Chain Management Institute, Columbus, pp. 147-166.

Langley, A. (2007), “Process thinking in strategic organization”, *Strategic Organization*, Vol. 5, No. 3, pp. 271-82.

Langlois, R.J. (1992), “External economies and economic progress: the case of the microcomputer industry”, *Business History Review*, Vol. 66, pp. 1-50, Springer.

Langlois, R.N. and Cosgel, M.M. (1998), “The organization of consumption”, in Bianchi, M. (ed), *The Active Consumer: Novelty and Surprise in Consumer Choice*, Routledge, London.

Lele, M.M., and Karmarkar, U.S. (1983), “Good support is smart marketing”, *Harvard Business Review*, Vol. 61, No. 6, pp. 124-132.

Levitt, T. (1969), *The Marketing Mode, Pathways to Corporate Growth*, McGraw-Hill, NY

Lewin, K. (1947), “Frontiers in group dynamics: Concept, method, and reality in social science”, *Human Relations*, Vol. 1, No. 1, pp. 5-42.

Lewis, M.W. (1998), “Iterative triangulation: a theory development process using existing case studies”, *Journal of Operations Management*, Vol. 16, No. 4, pp. 455-469.

Li, M. and Choi, T.Y. (2009), “Triads in Service Outsourcing: Bridge, Bridge Decay and Bridge Transfer”, *Journal of Supply Chain Management*, Vol. 45, No. 3, pp. 27-39.

Lightfoot, H.W., Baines, T. and Smart, P. (2011), “Examining the information and communication technologies enabling servitized manufacture”, *Proceedings of the Instution of Mechanical Engineers, Part B: Journal of Engineering Manufacture,* Vol. 225, pp. 1964-1968.

Lin, Y. and Zhou, L. (2011), “The impacts of product design changes on supply chain risk: a case study”, *International Journal of Physical Distribution & Logistics Management,* Vol. 41, No. 2, pp.162-186.

Lincoln, Y.S. and Guba, E.A. (1985), *Naturalistic Inquiry*, Sage Publications, Beverly Hills, CA.

Lindberg, N. and Nordin, F. (2008), “From products to services and back again: Towards a new service procurement logic”, *Industrial Marketing Management*, Vol. 37, No. 3, pp. 292-300.

Lockett, H.L., Johnson, M., Evans, S.E. and Bastl, M. (2011), “Product Service Systems and Supply Network Relationships: an exploratory case study”, *Journal of Manufacturing Technology Management*, Vol. 22, No. 3, pp. 293-313.

Lofland, J., Snow, D., Anderson, L. and Lofland, L.H. (2006), *Analysing Social Settings: A Guide to Qualitative Observation and Analysis,* 4th ed., Belmont, Wadsworth, California.

Macdonald, E., Wilson, H., Martinez, V. and Toossi, A. (2011), “Assessing value-in-use: A conceptual framework and exploratory study”, *Industrial Marketing Management*, Vol. 40, No. 5, pp. 671-682.

Macneil, I.R. (1980), *The New Social Contract, An Inquiry into Modern Contractual Relations*, Yale University Press, New Haven, CT.

Madhavan, R., Gnyawali, D.R. and He, J. (2004), "Two's company, three's a crowd? Triads in cooperative – competitive networks", *Academy of Management Journal*, Vol. 47, No. 6, pp. 918-927.

Manzini, E. and Vezolli, C. (2003), "A strategic design approach to develop sustainable product service systems: examples taken from the 'environmentally friendly innovation' Italian prize", *Journal of Cleaner Production*, Vol. 11, pp. 851-7.

Markovitz-Somogyi, R., Nagy, Z., and Torok, A. (2009), "Greening supply chain Management", *Acta Technica Jaurinensis Series Logistica*, Vol. 2, No. 3, pp. 367–374

Marshall, D., McIvor, R., Lamming, R. (2007), "Influences and outcomes of outsourcing: insights from the telecommunications industry", *Journal of Purchasing and Supply Management*, Vol.13, No. 4, pp. 245-260.

Martinez, V., Bastl, M., Kingston, J. and Evans, S. (2010), "Challenges in transforming manufacturing organisations into product-service providers", *Journal of Manufacturing Technology Management*, Vol. 21, No. 4, pp. 449-469.

Mathieu, V. (2001), "Product services: from a service supporting the product to a service supporting the client", *Journal of Business and Industrial Marketing*, Vol. 16, No. 1, pp. 39-58.

Matthyssens, P. and Vandenbempt, K. (2008), "Moving from basic offerings to value-added solutions: Strategies, barriers and alignment", *Industrial Marketing Management*, Vol. 37, No. 3, pp. 316-328.

Mattsson, L.G. (1973), "Systems selling as a strategy on industrial markets", *Industrial Marketing Management*, Vol. 3, No. 2, pp. 107-120.

Maxwell, J.A. and Mittapalli, K. (2010), "Realism as a stance for Mixed Methods Research", in Tashakkori, A. and Teddlie, C. *Handbook of Mixed Methods in Social and Behavioral Research*, (2nd edition), Sage Publications, Thousand Oaks, CA, pp. 339-352.

McIvor, R. (2000), “Strategic Outsourcing: Lessons from A Systems Integrator", *Business Strategy Review*, Vol. 11, No. 3, pp 41-50.

McIvor, R. (2008), “What is the right outsourcing strategy for your process?”, *European Management Journal*, Vol. 26, No. 1, pp. 24-34.

McIvor, R. (2009), “How the transaction cost and resource-based theories of the firm inform outsourcing evaluation”, *Journal of Operations Management*, Vol. 27, No. 1, pp. 45-63.

Meijkamp, R. (2000), *Changing Consumer Behaviour through Eco-efficient Services. An Empirical Study of Car Sharing in The Netherlands*, Doctoral Thesis, Delft University of Technology, Delft, Netherlands.

Menor, L.J., Tatikonda, M.V. and Sampson, S.E. (2002), “New service development: areas for exploitation and exploration”, *Journal of Operations Management*, Vol. 20, No. 2, pp. 135-157.

Mentzer, J.T. (2008), “Rigor versus relevance: why would we choose only one?”, *Journal of Supply Chain Management*, Vol. 44, No. 2, pp. 72-77.

Mentzer, J.T. and Flint, D.J. (1997), “Validity in logistics research”, *Journal of Business Logistics*, Vol. 18, No. 1, pp. 199-216.

Meredith, J. (1998), “Building operations management theory through case and field research”, *Journal of Operations Management*, Vol. 16, No. 4, pp. 441-454.

Michel, S., Brown, S.W. and Gallan, A.S. (2008), “An expanded and strategic view of discontinuous innovations: deploying a service-dominant logic”, *Journal of the Academy of Marketing Science*, Vol. 36, No. 1, pp. 54-66.

Miles, M. and Huberman, M. (1994), *Qualitative data analysis: An expanded sourcebook*, 2nd edition, Sage Publications, Thousand Oaks, CA.

Miller D., Hope, Q., Eisenstat, R., Foote, N. and Galbraith, J. (2002), “The problem of solutions: balancing clients and capabilities”, *Business Horizons*, Vol. 45, No. 2, pp. 3-12.

Mintzberg H., Simons R. and Basul K. (2002), “Beyond Selfishness”, *Sloan Management Review*, Vol. 44, No.1, pp. 67-74.

Mitchell, J.C. (1983), “Case and situational analysis”, *Sociological Review*, Vol. 31, No. 2, pp. 187-211.

Mohr, L.B. (1982), *Explaining Organizational Behaviour: The Limits and Possibilities of Theory and Research,* Jossey-Bass, San Francisco, CA.

Mollenkopf, D., Russo, I. and Frankel, R. (2007), “The returns management process in supply chain strategy”, *International Journal of Physical Distribution & Logistics Management*, Vol. 37, No. 7, pp. 568-92.

Moller, K.E.K., and Torronen, P. (2003), “Business suppliers' value creation potential: A capability based analysis”, *Industrial Marketing Management*, Vol. 32, No. 2, pp.109-118.

Monczka, R.M., Petersen, K.J., Handfield, R.B. and Ragatz, G.L. (1998), “Success factors in strategic supplier alliances: The buying company perspective”, *Decision Sciences*, Vol. 29, No. 3, pp. 553-577.

Mont, O. (2000), *Product-Service Systems: Final Report*, IIIEE Report Series, Lund University.

Mont, O. (2001), “Sustainable Services Systems (3S): Transition towards sustainability?”, paper presented at *Towards Sustainable Product Design 6th International Conference*, Amsterdam, The Netherlands.

Mont, O. (2004), *Product-service systems: panacea or myth?,* Doctoral Thesis, Lund University, Sweden

Morelli, N. (2003), “Product service-systems, a perspective shift for designers: a case study – The design of a telecentre”, *Design Studies*, Vol. 24, No.1, pp. 73-99.

Morgan, D.L. (2007), “Paradigms Lost and Pragmatism Regained”, *Journal of Mixed Methods Research*, Vol. 1, No.1, pp. 48-76.

Morgan, R.M. and Hunt, S.D. (1994), “The Commitment-Trust Theory of Relationship Marketing”, *Journal of Marketing*, Vol. 58, No. 3, pp. 20-38.

Morris, M.H., Brunyee, J. and Page, M. (1998), “Relationship Marketing in Practice: Myths and Realities”, *Industrial Marketing Management*, Vol. 27, pp. 359-371.

Morse, J.M. (2010), “Procedures and practice of mixed method design”, in Tashakkori, A. and Teddlie, C. (eds), *Handbook of Mixed Methods in Social and Behavioral Research*, 2nd edition, Sage, Thousand Oaks, CA, pp. 339-352.

Mukherji, A. and Francis, J.D. (2008), “Mutual adaptation in buyer-supplier relationships”, *Journal of Business Research*, Vol. 61, No. 2, pp. 154-161.

Naumann, E. and Giel, K. (1995), *Customer satisfaction measurement and management: using the voice of the customer,* Thomson Executive Press, Cincinnati.

Neely, A. (2008), “Exploring the financial consequences of the servitization of manufacturing”, *Operations Management Research.* Vol. 1, No. 2, pp. 103-118.

Neely, A., Benedettini, O., and Visnjic, I. (2011), “The servitization of manufacting: Further evidence”, paper presented at *18th European Operations Management Association Conference*, Cambridge, UK.

Neu, W.A. and Brown, S.W. (2005), “Forming successful business-to-business services in goods-dominant firms”, *Journal of Service Research*, Vol. 8, No. 1, pp. 3-17.

Nordin, F. (2006), “Outsourcing services in turbulent contexts: lessons from a multinational systems provider”, *Leadership & Organization Development Journal*, Vol. 27, No. 4, pp. 296-315.

Nordin, F. and Kowalkowski, C. (2010), “Solutions offerings: a critical review and reconceptualisation”, *Journal of Service Management*, Vol. 21, No. 4, pp. 441-59.

Nordin, F., and Servadio, L. (2012), “Critical issues during servitization: an in-depth case study”, paper presented at *International Service Research Confrence,* Hanken School of Economics, Helsinki, Finland, June 7-9, 2012.

Normann, R. (1991), *Service Management, Strategy and Leadership in Service Business*, 2nd ed., John Wiley & Sons, New York.

O'Laughlin, K.A., Cooper, J.C. and Cabocal, E. (1993), *Reconfiguring European Logistics Systems*, Council of Logistics Management, Oak Brook, IL.

Oliva, R. and Kallenberg, R. (2003), "Managing the transition from products to services", *International Journal of Service Industry Management*, Vol. 14, No. 2, pp. 160-172.

Oliver, C. (1990), "Determinants of inter organizational relationships: Integration and future directions", *Academy of Management Review*, Vol. 15, pp. 241-265.

Ordanini, A. (2011), "The ties that bind: How cooperative norms and readiness to change shape the role of established relationships in business-to-business e-commerce", *Journal of Business-to-Business Marketing*, Vol. 18, No. 3, pp. 276-304.

Patton, M.Q. (1980), *Qualitative Evaluation Methods*, Sage Publications, Thousand Oaks, CA.

Patton, M.Q. (1990), *Qualitative Evaluation and Research Methods*, 2nd Edition, Sage Publications, Thousand Oaks, CA.

Patton, M.Q. (2002), *Qualitative Research and Evaluation Methods,* 3rd Edition, Sage Publications, Thousand Oaks, CA.

Pawar, K.S., Beltagui, A. and Riedel, J.C.K.H. (2009), "The PSO triangle: designing product, service and organisation to create value", *International Journal of Operations & Production Management*, Vol. 29, No. 5, pp. 468-493.

Peirce, C. S. (1903/1998), *The essential Peirce Selected philosophical writings (1893–1913),* Vol. 2, (Original work published in 1903), Indiana University Press, Bloomington.

Penttinen, E., Hallikainen, P. and Salomaki, T. (2010), "Impacts of the Implementation of Electronic Invoicing on Buyer-Seller Relationships", *Journal of Information Technology Research*, Vol. 3, No. 1, pp.28– 42.

Penttinen, E. and Palmer, J. (2007), “Improving firm positioning through enhanced offerings and buyer–seller relationships”, *Industrial Marketing Management*, Vol. 36, No. 5, pp. 552-564.

Peteraf, M.A. (1993), “The cornerstones of competitive advantage: A resource-based view”, *Strategic Management Journal,* Vol. 14, No. 3, pp. 179-191.

Pettigrew, A.M. (1990), “Longitudinal field research on change: theory and practice”, *Organization Science,* Vol.1, No. 3, pp. 267-292.

Pettigrew, A.M. (1997), “What is a processual analysis?”, *Scandinavian Journal of Management*, Vol. 13, No. 4, pp. 337-348.

Pfeffer, J. (1982), *Organizations and Organization Theory*, Pitman, Boston.

Pfeffer, J. and Salancik, G.R. (1978), *The external control of organizations: A resource dependence perspective*, Harper & Row Publishers Inc., New York.

Pfeffer, J. and Salancik, G.R. (2003), *The external control of organizations: A resource dependence perspective*, New edition, Harper & Row Publishers Inc., New York.

Philips, D.C. (1987), *Philosophy, science, and social inquiry: Contemporary methodological controversies in social science and related applied fields of research*, Pergamon Press, Oxford, UK.

Phillips, J.,M., Liu, B.,S., and Costello, T.,G. (1998), “A balance theory perspective of triadic supply chain relationships”, *Journal of Marketing Theory and Practice*, Vol. 6, No.4, pp. 78−91.

Platts, K.W. (1994), “Characteristics of Methodologies for Manufacturing Strategy Formulation”, *Computer Integrated Manufacturing Systems*, Vol. 7, No. 2, pp. 93-99.

Pratt, M.G. (2008), “Fitting oval pegs into round holes: Tensions in evaluating and publishing qualitative research in top-tier North American journals”, *Organizational Research Methods*, Vol. 11, No. 3, pp. 481-509.

Provan, K. G., Fish, A., and Sydow, J. (2007), “Interorganizational networks at the network level: A review of the empirical literature on whole networks”, *Journal of Management*, Vol. 33, No. 3, pp. 479–516.

Quinn, J.B., Doorley, T.L. and Paquette, P.C. (1990), “Beyond Products: Services-Based Strategy”, *Harvard Business Review*, March-April, pp. 58-67.

Raja, J., Bourne, D., Goffin, K., Cakkol, M., and Martinez, V. (2013), “Achieving Customer Satisfaction through Integrated Products and Services: An Exploratory Study”, *Journal of Product Innovation Management*.

Rajamma, R.K., Zolfagharian, M.A. and Pelton, L.E. (2011), “Dimensions and outcomes of B2B relational exchange: a meta-analysis”, *Journal of Business & Industrial Marketing*, Vol. 26, No. 2, pp. 104–114.

Randall, W.S., Defee, C.C. and Brady, S.P. (2010), “Value propositions of the U.S. Trucking Industry”, *Transportation Journal*, Vol. 49, No. 3, pp. 5-23.

Ren, G. and Gregory, M. (2007), “Servitization in manufacturing companies”, paper presented at *16th Frontiers in Service Conference*, San Francisco, CA.

Riege, A.M. (2003), “Validity and reliability tests in case study research: a literature review with “hands-on” applications for each research phase”, *Qualitative Market Research*, Vol. 6, No. 2, pp. 75-86.

Ring, P.S., and Van de Ven, A.H. (1992), “Structuring Cooperative Relationships between Organizations”, *Strategic Management Journal*, Vol. 13, No. 7, pp. 483-498.

Ring, P.S., and Van de Ven, A.H. (1994), “Developmental processes of cooperative interorganizational relationships”, *The Academy of Management Review*, Vol. 19, No. 1, pp. 90-118.

Robinson, T., Clarke-Hill, C.M. and Clarkson, R. (2002), “Differentiation through service: a perspective from the commodity chemicals sector”, *The Service Industries Journal*, Vol. 22, No. 3, pp. 149-166.

Robson, C. (2011), *Real Word Research,* Third Edition, Wiley & Sons , West Sussex, UK.

Ross, A., Venkataramanan, M.A. and Ernstberger, K.W. (1998), “Reconfiguring the supply network using current performance data”, *Decision Sciences*, Vol. 29, No. 3, pp. 707-28.

Rossetti, C. and Choi, T.Y. (2008), “Supply management under high goal incongruence: an empirical examination of disintermediation in the aerospace supply chain”, *Decision Sciences,* Vol. 39, pp. 507-540.

Sainsbury, L.T. (2007), “*The Race to the Top, A review of Government’s Science and Innovation Policies*”, Her Majesty’s Treasury, London.

Salancik, G.R. (1979), “Interorganizational Dependence and Responsiveness to Affirmative Action: The Case of Women and Defense Contractors”, *Academy of Management Journal,* Vol. 22, No. 2, pp. 375-394.

Sanderson, J. (2009), “Buyer-Supplier Partnering in UK Defence Procurement: Looking Beyond the Policy Rhetoric”, *Public Administration*, Vol. 87, No. 2, pp. 327-50.

Sawhney, M. (2006), “Going beyond the product: defining, designing and delivering customer solutions”, in Lusch, R.F. and Vargo, S.L. (eds), *The Service-Dominant Logic of Marketing: Dialog, Debate and Directions,* M.E. Sharpe, New York, pp. 365-380.

Sawhney, M., Wolcott, R. C., and Arroniz, I. (2006), “The 12 Different Ways for Companies to Innovate”, *MIT Sloan Management Review,* Vol. 47, No. 3, pp. 75-81.

Schmenner, R.W. (2009), “Manufacturing, service, and their integration: some history and theory”, *International Journal of Operations & Production Management*, Vol. 29, No. 5, pp. 431-443.

Seuring, S.A. (2008), “Assessing the rigor of case study research in supply chain management”, *Supply Chain Management: An International Journal*, Vol. 13, No. 2, pp. 128-137.

Sheth, J.N. and Mittal, B. (2004), *Customer behaviour: A managerial perspective,* Thomson, Mason, South-Western, OH.

Silverman, D. (2005), *Doing Qualitative Research,* Second Edition,Sage Publications, London, UK.

Simmel, G. (1955), Der steit [Chapter 4 in Sozioiogie], in K. H. Wolff and R. Bendix (Trans.), Georg Simmel: Conllict & the web of group affiliations, pp. 11 - 123. Free Press, New York. (Original work published 1908)

Slack N. (2005), “Operations Strategy: Will it ever realise its potential”, *Gestão & Produção*, Vol.12, No. 3, pp. 323 – 332.

Smith, T.M.F. (1993), “Populations and Selection: Limitations of Statistics (Presidential address)”, *Journal of the Royal Statistical Society Series A (Statistics in Society)*, Vol. 156, No. 2, pp. 144-166.

Spekman, R.E. and Carraway, R. (2006), “Making the transition to collaborative buyer–seller relationships: an emerging framework”, *Industrial Marketing Management*, Vol. 35, pp. 10-19.

Spens, K.M. and Kovács, G. (2006), “A content analysis of research approaches in logistics research”, *International Journal of Physical Disctribution & Logistics Management,* Vol. 36, No. 5, pp. 374-390.

Spring, M. and Araujo, L. (2009), “Service, services and products: rethinking operations strategy”, *International Journal of Operations & Production Management*, Vol. 29, No. 5, pp. 444-467.

Stewart, G.T., Kolluru, R. and Smith, M. (2009), “Leveraging Public-Private Partnerships to Improve Community Resilience in Times of Disaster”, *International Journal of Physical Distribution & Logistics Management*, Vol. 39, No. 5, pp. 343–364.

Stigler, G. (1963), “United States v. Loew's Inc.: A note on block booking”, *Supreme Court Review*, Vol. 152, pp. 152-157.

Storbacka, K. (2011), “A solution business model: Capabilities and management practices”, *Industrial Marketing Management*, Vol. 40, No. 5, pp. 699-711.

Storbacka, K., Ryals, L., Davies, I.A., and Nenonen, S. (2009), “The changing role of sales: viewing sales as a strategic, cross-functional process”, *European Journal of Marketing*, Vol. 43, No. 7/8, pp. 890-906.

Strauss, A. and Corbin, J. (1998), *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 2nd ed., Sage Publications, Thousand Oaks, CA.

Strauss, A.L. and Corbin, J. (1990), *Basics of qualitative research,* Sage Publications, Newbury Park, CA.

Syson, F. and Perks, H. (2004), “New service development: a network perspective”, *Journal of Services Marketing,* Vol. 18, No. 4, pp. 255-266.

Teece, D., Pisano, G., and Shuen, A. (1997), “Dynamic capabilities and strategic management”, *Strategic Management Journal*, Vol. 18, No. 7, pp. 509-533.

Teece. D. (1986), “Profiting from technological innovation: Implications for integration”, *Research Policy*, Vol. 15, No. 6, pp. 285-305.

Thibaut, J.W. and Kelley, H.H. (1959), *The Social Psychology of Groups*, John Wiley & Sons Inc., New York.

Tiles, J.E. (2000), “Pragmatism in Ethics”, in *Concise Routledge Encyclopedia of Philosophy,* Routledge, New York, NY, pp. 705.

Tokman, M. and Beitelspacher, L.S. (2011), “Supply chain networks and service-dominant logic: suggestions for future research”, *International Journal of Physical Distribution and Logistics Management*, Vol. 41, No. 7, pp. 717-726.

Trent, R.J. (2004), “What everyone needs to know about SCM”, *Supply Chain Management Review*, Vol. 8, No. 2, pp. 52-59.

Trimarchi, M. (2001), *International business relationships: a study of interaction between Mainland Chinese, Hong Kong Chinese and Western actors*, Doctoral Thesis, School of Management, University of Queensland, Brisbane.

Tukker, A. (2004), “Eight types of product-service system: eight ways to sustainability? Experiences from SusProNet”, *Business Strategy and the Environment*, Vol. 13, No. 4, pp. 246-60.

Tuli, K.R., Kohli, A.K. and Bharadwaj S.G. (2007), “Rethinking customers’ solutions: from product bundles to relational processes”, *Journal of Marketing*, Vol. 71, July, pp. 1-17.

Ulaga, W. and Eggert, A. (2006), “Value-based differentiation in business relationships: Gaining and sustaining key supplier status”, *Journal of Marketing,* Vol. 70, No. 1, pp. 119-136.

Uzzi, B. (1997), “Social structure and competition in interfirm networks: The paradox of embeddedness”, *Administrative Science Quarterly*, Vol. 42, No. 1, pp. 35-67.

Van de Ven, A.H. (1976), “On the nature, formation, and maintenance of relations among organizations”, *Academy of Management Review,* Vol. 1, No. 4, pp. 24-36.

Van Echtelt, F.E.A. (2004), *New Product development: shifting suppliers into gear,* Doctoral Thesis, Eindhoven Center for Innovation Studies (ECIS) Eindhoven University of Technology, Netherlands.

Van Hoek, R., Johnson, M., Godsell, J. and Birtwistle, A. (2010), “Changing chains three case studies of the change management needed to reconfigure European supply chains”, *International Journal of Logistics Management*, Vol. 21, No. 2, pp. 230-250.

Van Weele, A. (2004), *Purchasing and Supply Chain Management*, Thomson Learning, London.

Vandermerwe, S. (1990), “The power of services”, *European Management Journal*, Vol. 8, No. 4, pp. 464-473.

Vandermerwe, S. (2000), “How Increasing Value to Customers Improves Business Results”, *Sloan Management Review*, Vol. 42, No. 1, pp. 27-38.

Vandermerwe, S. and Rada, J. (1988), “Servitization of business: adding value by adding services”, *European Management Journal*, Vol. 6, No. 4, pp. 314-24.

Vargo, S. and Lusch, R. (2004), “Evolving to a new dominant logic for marketing”, *Journal of Marketing*, Vol. 68, pp. 1-17.

Vargo, S.L. and Lusch, R.F. (2008), “Service-dominant logic: Continuing the evolution”, *Journal of the Academy of Marketing Science*, Vol. 36, No. 1, pp. 1-10.

Vickery, S.K., Jayaram, J., Droge, C., and Calantone, R. (2003), “The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships”, *Journal of Operations Management*, Vol. 21, No. 5, pp. 523–539.

Voss, C., Tsikriktsis, N., and Frohlich, M. (2002), “Case research in operations management”, *International Journal of Operations & Production Management*, Vol. 22, No. 2, pp. 195-219.

Wacker, J.G. (1998), “A definition of theory: research guidelines for different theory-building research methods in operations management”, *Journal of Operations Management*, Vol. 16, pp. 361-385.

Warren, R. L. (1967), “The interorganizational field as a focus for investigation”, *Administrative Science Ouarterly*, Vol. 12, pp. 396-419.

Wasserman, S. and Faust, K. (1994), *Social Network Analysis: Methods and Applications,* Cambridge University Press, UK.

Whetten, D. A. (1981), “Interorganizational relations: A review of the field”, *Journal of Higher Education*, Vol. 52, pp. 1-28.

Whipple, J. M., Frankel, R. and Daugherty, P. J. (2002), "Information support for alliances: performance implications", *Journal of Business Logistics*, Vol. 23, No. 2, pp. 67-82.

White, A., Johnson, M. and Wilson, H. (2008), “RFID in the supply chain: lessons from European early adopters”, Vol. 38, No. 2, pp. 88-107.

Wicks, A., C. and Freeman, R., E. (1998), “Organization Studies and the New Pragmatism: Positivism, Anti-positivism, and the Search for Ethics”, *Organization Science*, Vol. 9, No. 2, pp. 123-140.

Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Antitrust Implications*, Free Press, New York.

Williamson, O.E. (1985), *The economic institutions of capitalism*, Free Press, New York.

Williamson, O.E. (1991), “Strategizing, economizing, and economic organization”, *Strategic Management Journal,* Vol. 12, pp. 75-94.

Windahl, C. and Lakemond, N. (2006), “Developing integrated solutions: The importance of relationships within the network”, *Industrial Marketing Management*, Vol. 35, No. 7, pp. 806-818.

Windahl, C., and Lakemond, N. (2010), “Integrated solutions from a service-centered perspective: applicability and limitations in the capital goods industry”, *Industrial Marketing Management*, Vol. 39, No. 8, pp. 1278-1290.

Wise, R. and Baumgartner, P. (1999), “Go downstream: the new profit imperative in manufacturing”, *Harvard Business Review*, Vol. 77, No. 5, pp. 133-41.

Wong, M. (2004), *Implementation of innovative product service-systems in the consumer goods industry*, Doctoral Thesis, Cambridge University.

Woo, K. and Ennew, C.T. (2004), “Business-to-business relationship quality: An IMP interaction-based conceptualization and measurement”, *European Journal of Marketing*, Vol. 38 No: 9/10, pp. 1252-1271.

Wu, Z. and Choi, T.Y. (2005), “Supplier–supplier relationships in the buyer–supplier triad: Building theories from eight case studies”, *Journal of Operations Management*, Vol. 24, No. 1, pp. 27-52.

Wynstra, F., Axelsson, B. and Van der Valk, W. (2006), “An application-based classification to understand buyer supplier interaction in business services”,

International Journal of Service Industry Management, Vol. 17, No. 5, pp. 474-96.

Yamagishi, T., Gillmore, M.R. and Cook, K.S. (1988), “Network connections and distribution of power in exchange networks”, *American Journal of Sociology*, Vol. 93, No. 4, pp. 833-51.

Yin, R.K. (2002), *Case Study Research Design and Methods*, 3rd Edition, Sage Publications, London.

Yin. R. (2003). *Case Study Research*, 3rd edition. Sage Publications, Thousand Oaks, CA.

Yin, R.K. (2009*), Case Study Research Design and Methods*, 5th Edition, Sage Publications, London.

Zajac, E.I. and Olsen, C.P. (1993), “From transaction cost to transaction value analysis: Implications for the study of inter-organizational strategies”, *Journal of Management Studies*, Vol. 30, No. 1, pp. 131-145.

APPENDICES

Appendix A The IOR related Servitization Literature

Publication (author / year/ journal)	Type of theory-building (cf. Wacker, 1998)	Level of analysis	Relevant Findings / Identified Network Relationships Attributes
Vandermerwe and Rada (1988) *European Management Journal 1988*	Analytical-Conceptual	Firm	Terming 'servitization'; a trend which is customer-driven. Moving into services requires a particular mentality, the use of appropriate people and the creation of a service-oriented environment. Competitive dynamics are changing. Creation of new business units and branch firms to deliver integrated solutions. First mention of network in servitization context.
Galbraith (2002) *Organizational Dynamics*	Analytical-Conceptual	Firm	- Distinguishes between product- and customer-centric organisations - To deliver solutions, a firm has to be customer-centric Choice of partners and their importance in development and fulfilment of solutions Related Attributes: Customer centricity, partner selection
Oliva and Kallenberg (2003) *International Journal of Service Industry Management*	Empirical-Case studies	Firm	- *'Create separate organisations and develop infrastructure to respond to local service demands'* (p.165). - Development of a new service network is essential Related attributes: network development
Davies et al. (2006) *Sloan Management Review*	Empirical-Case studies	Firm	Restructuring of organisation and re-organisation of internal capabilities to deliver integrated solutions is necessary. (3-level transformation). Reference to partnerships and alliances with suppliers and customers throughout the paper. Clear indication of network elements, in Nokia's successful example (p. 47). Related attributes: building strategic partnerships with customer/suppliers, operational counselling
Cohen et al. (2006) *Harvard Business Review*	Analytical-Conceptual	Firm	- Importance of after-sales because they increase customer loyalty and revenues - Challenges of after-sales business - Production and after-sales networks differ a lot - Importance of the design of after-sales service supply chain. Prerequisite in order to enter the business. Related Attributes: network development
Windahl and Lakemond	Empirical-Case studies	Network	- Factors that affect the implementation of integrated solutions and the strength of the

(2006) *Industrial Marketing Management*	– a process study of integrated solutions		relationships between the different actors involved in the process - Clear indication of the importance of external (to the firm) actors for the success of the integrated solution **Related Attributes: the firm's position in the network, the strength of the relationship amongst different actors, impact on existing internal activities, solutions' impact on customer, firm's network horizon, external determinants**
Tuli et al. (2007) *Journal of Marketing*	Empirical – One large-scale case study	Firm	- Introduced the relational process view of solutions and identified the differences between the way in which suppliers and customers define solutions - Introduced the concept that changes in supplier organisations are not sufficient to sustain an efficient solution but rather customers need to adapt and be open to political and operational counselling Related Attributes: (For suppliers) contingent hierarchy, documentation emphasis, incentive externality, customer interactor stability, process articulation; (For customers) Customer adaptiveness, political counselling, operational counselling
Johnsen et al. (2009) *Supply Chain Management: An International Journal*	Empirical – One case study in defence sector – senior management	Network	- Evaluates the changing patterns of UK defence industry towards solutions and the resultant implications on supply chains and relationships - Major changes currently taking place that have major impacts on defence supply relationships **Related Attributes: strategic partnership and shift in priorities, through-life management, transparency, mutuality, risk and benefit sharing**
Lockett et al. (2011) *Journal of Manufacturing Technology Management*	Empirical – A case study	A tripartite relationship	- Impact of product-service systems on upstream supply chains - Identifies general relationships related challenges **Related Attributes: supplier engagement in PSS strategy and delivery, alignment of incentives between PSS provider and suppliers, the effect of PSS on planned business developments; information sharing in PSS delivery, and overall, life cycle considerations related to PSS delivery.**
Bastl et al. (2012) *International Journal of Operations & Production Management*	Empirical – A case study	A tripartite relationship	- Use of Cannon and Perreault framework to capture the relationship behaviours of two suppliers - Only limited to supplier's and provider's points of view **Related Attributes: information exchange, operational linkages, legal bonds, cooperative norms, buyer-seller adaptations**

Note: The attributes identified above which are in bold font are extracted from servitization studies which explicitly focus on IORs. The attributes that are not in bold font belong to a study where the IOR is treated as a peripheral issue.

Appendix B The Case Study Database

Int. No.	Organisation/Region	Date	Duration (h)	Role	Data collected
1	TruckCo HQ / South West	02/11/2009	2.35	CEO	Transcript + notes + secondary data
2	TruckCo HQ / South West	13/12/2010	1.28	Retail Sales Director For New & Used Vehicles	Transcript + notes + secondary data
3	TruckCo HQ / South West	13/12/2010	1.52	Head of UK After Sales	Transcript + notes
4	TruckCo HQ / South West	14/12/2010	1.08	Head of UK Parts	Transcript + notes
5	TruckCo HQ / South West	14/12/2010	0.57	Communications, Events and PR Manager	Transcript + notes + secondary data
6	TruckCo HQ / South West	14/12/2010	1.03	Business Development	Transcript + notes
7	TruckCo HQ / South West	31/01/2011	2.00	Sales Director (Midlands)	Transcript + notes
8	TruckCo HQ / South West	31/01/2011	1.40	Training and Development Manager	Transcript + notes + secondary data
9	TruckCo HQ / South West	31/01/2011	1.07	Human Resources Director	Transcript + notes
10	TruckCo HQ / South West	07/02/2011	1.00	Communication, Digital, Media	Transcript + notes
11	TruckCo HQ / South West	07/02/2011	1.00	After Sales Communication	Transcript + notes
12	TruckCo HQ / South West	07/02/2011	1.30	Part Business Development	Transcript + notes + secondary data
13	TruckCo HQ / South West	08/02/2011	1.00	Defence Account Management	Transcript + notes
14	TruckCo HQ / South West	08/02/2011	1.00	Head of UK Network Development	Transcript + notes
15	TruckCo HQ / South West	08/02/2011	1.40	Head of UK Service And Support	Transcript + notes
16	TruckCo / East Midlands	23/03/2011	1.36	International Key Account Manager	Transcript + notes
17	TruckCo / East Midlands	23/03/2011	1.17	Sales Manager Centre Midlands – Retail Sales	Transcript + notes
18	TruckCo / East Midlands	23/03/2011	0.43	Commercial Manager	Transcript + notes + secondary data
19	TruckCo / East Midlands	23/03/2011	1.35	International Key Account Manager	Transcript + notes
20	TruckCo / East Midlands	23/03/2011	0.58	Account Manager	Transcript + notes

21	TruckCo HQ / South West	28/08/2011	0.50	Customer Relationship Manager	Transcript + notes + secondary data
22	TruckCo HQ / South West	28/08/2011	1.20	Director Key Accounts And Special Product	Transcript + notes
23	TruckCo HQ / South West	28/08/2011	1.05	Sales Engineering Manager	Transcript + notes
24	TruckCo HQ / South West	28/08/2011	1.06	Sales Retail Operations Manager	Transcript + notes
25	Dealer 1 / Noth West	04/05/2011	2.35	Owner	Transcript + notes + secondary data
26	Dealer 2 / South East	03/06/2011	1.13	Service Operations Manager	Transcript + notes + secondary data
27	Dealer 2 / South East	03/06/2011	1.00	Service & Business Development Manager	Transcript + notes
28	Dealer 2 / South East	03/06/2011	1.25	Parts Manager	Transcript + notes
29	Dealer 2 / South East	03/06/2011	1.19	General Manager	Transcript + notes
30	Dealer 3 / East	20/06/2011	1.20	Managing Director	Transcript + notes + secondary data
31	Dealer 3 / East	20/06/2011	2.35	Sales Manager	Transcript + notes
32	Dealer 4 / London	16/08/2011	2.00	General Manager	Transcript + notes
33	Dealer 4 / London	16/08/2011	2.00	After-sales Manager	Transcript + notes
34	TelCo / South West	24/07/2011	1.17	Managing Director	Notes
35	TelCo / South West	24/07/2011	1.05	Technical Director	Notes
36	TelCo / South West	24/07/2011	0.40	Customer Manager	Notes
37	Customer 1 / West Midlands	04/08/2011	1.35	CEO	Transcript + notes + secondary data
38	Customer 1 / West Midlands	04/08/2011	2.35	Fleet Engineer	Notes
39	Customer 2 / East Midlands	28/07/2011	1.30	Fleet Manager	Transcript + notes + secondary data
40	Customer 2 / East Midlands	28/07/2011	1.30	Service Manager	Notes
41	Customer 3 / East Midlands	06/10/2011	42.00	Small Fleet Owner	Notes
42	Customer 4 / London	06/10/2011	36.00	Owner-Driver	Notes
43	Customer 5 / London	06/10/2011	45.00	Owner-Driver	Notes

Appendix C The Interview Protocols

This Appendix has two related objectives. The first is to present the interview protocols used in this study. The second objective is to demonstrate the way in which the protocol evolved through the interviews as part of the abductive research process. To this end, there are three interview protocols within this Appendix. The first one is the initial protocol that was used in the first interviews. The second is the protocol used towards the middle of the interviewing process which evolved to incorporate additional questions. The third is the protocol used towards the end of the data collection process.

In order to demonstrate the evolution of the interview questions, the changes are highlighted within each protocol and accordingly the reasons of these alterations are detailed below in brackets for each of the highlighted question.

Key: Highlighted texts indicate that the question is either removed, refined or inserted to the protocol. Accordingly, further explanations are detailed in the brackets below the questions.

The Initial Interview Protocol used for the Interviewee No. 3 at TruckCo

A. Interview Checklist

Items to bring into the interview:

1. Business Cards √
2. Interview protocol √
3. Blank Sheets √
4. Pens to take notes √
5. Digital recorder √
6. Extra batteries √

B. Introduction

My name is Mehmet Cakkol and I am a doctoral researcher at Cranfield School of Management. Thank you for agreeing to participate in this study. This interview generally takes place in approximately 60-90 minutes. *(Personal note: clarify if the interviewee is comfortable with the duration of the interview in terms of her/his schedule and briefly explain the purposes of the research)*

With your agreement, I would like to record this interview. All of the information from this interview will be kept confidential and will not be used for any other purposes. Your name (or the name of your organisation) will never be mentioned without your consent in any of the analysis or resultant publications. Are you comfortable for me to record the interview?

C. Interview Questions

1) Context

[In this section, the questions are aimed to understand the background information about the personal history, organisation and operating environment]

1.1 Could you please tell me briefly about your background and how you came to work in your current role within the organisation?

Probe: How long have you been with the company?

Probe: What are your main responsibilities?

1.2 What is the size of the company in terms of annual turnover and employee size?

Probe: How many vehicles do you sell on average in a year?

Probe: How is the company spread (location) across UK?

Probe: What are the names of the divisions and their responsibilities?

[This question was removed after the initial interviews since these organisational figures were captured and also validated through the company website]

1.3 Could you please tell me briefly about the organisation and the industry you operate within?

Probe: How has the market evolved over the last 10 years?

1.4 What are the strategic priorities of TruckCo?

Probe: How do you see your organisation positioned in the market compare to your competitors?

1.5 How has the organisation introduced servitization?

Probe: What are the drivers towards servitization?

Probe: How do you see the uptake of servitization within your customer base and the industry?

2) The Offerings and the Network Structure

[In this section the questions related to the offerings and network structures are asked]

2.1 What types of offerings does TruckCo provide?

Probe: What are the products and services provided?

[This question was replaced with a better worded to question in order to uncover the perception of the interviewee about the offerings]

2.2 Who are the customers?

Probe: What is the portfolio of your customer base?

Probe: Where are your customers located?

[This question was removed since the customer portfolio was identified within the initial interview]

2.3 How is the network structured to deliver the offerings?

Probe: Which other network members are involved in the provision of these offerings?

3) Relationships Attributes

[In this section, the questions related to the relationship attributes are asked]

3.1 What are the contingencies of servitization in a network perspective?

3.2 How would you describe TruckCo's relationship with the network with respect to the offerings provided?

3.2.1 How do you communicate with your network partners?

3.2.2 How are your organisation's routines and systems linked with other network member's?

3.2.3 What are the contractual agreements between your organisation and other network members?

3.2.4 How do you see your relationship with other network members in terms of collaboration?

3.2.5 How do you think your organisation adapted to the relationship with other network members?

[These are the five relationship dimensions adopted from Cannon and Perreault (1999). These questions were later refined and inserted as separate questions]

3.3 How does your organisation measure the performance?

Probe: How would you define performance in the context of your department and organisation?

D. Ending the Interview

- In your opinion, are there any issues that were overlooked that I should have covered?
- Would you be willing to be informed about the results of this research?
- Could I contact you in case I need to ask further questions to clarify my understanding?

(Personal note: Record the email address and the contact number of the interviewee)

Thank you very much for participating in this research.

The Interview Protocol - Used for the Interviewee No. 12 at TruckCo

A. Interview Checklist

Items to bring into the interview:

1	Business Cards	√
2	Interview protocol	√
3	Blank Sheets	√
4	Pens to take notes	√
5	Digital recorder	√
6	Extra batteries	√

B. Introduction

My name is Mehmet Cakkol and I am a doctoral researcher at Cranfield School of Management. Thank you for agreeing to participate in this study. This interview generally takes place in approximately 60-90 minutes. *(Personal note: clarify if the interviewee is comfortable with the duration of the interview in terms of her/his schedule and briefly explain the purposes of the research)*

With your agreement, I would like to record this interview. All of the information from this interview will be kept confidential and will not be used for another purpose. Your name (or your organisation's name) will never be mentioned without your consent in any of the analysis or resultant publications. Are you comfortable for me to record the interview?

C. Interview Questions

1) Context - Personal History, Organisation and Operating Environment

1.1 Could you please tell me briefly about your background and how you came to work in your current role within the organisation?

Probe: How long have you been with the company?

Probe: What are your main responsibilities?

1.2 Could you please tell me briefly about the organisation and the industry you operate within?

Probe: How has the market evolved over the last 10 years?

1.3 What are the strategic priorities for your organisation?

Probe: How do you see your organisation positioned in the market compare to your competitors?

1.4 How has the organisation introduced servitization?

Probe: What are the drivers towards servitization?

Probe: How do you see the uptake of servitization within the industry?

1.5 How would you describe the competitive environment that you operate in?

Probe: How is TruckCo different from its competitors?

Probe: How do you see yourself positioned against competitors?

Probe: How does TruckCo learn from the competitors?

[Competition emerged from the initial interviews therefore further questions were added to explore the role of competitors. Nevertheless, it was seen that due to legislations governing competition rules and regulations in the UK, the managers were seen to have limited knowledge of their competitors. Another interpretation would be that the managers were reluctant to talk about these competitors due to the

competition regulatory rules. Therefore, the competition related questions were removed from the next versions]

2) The Offerings and Network Structure

2.1 How do you perceive the offerings of TruckCo?

Probe: How are these different from the other suppliers?

Probe: Have you experienced any change in the value propositions of TruckCo in the last 10 years? If so, what are these?

Probe: What is your understanding of telematics services?

[This question replaced the earlier questions since it allowed an in depth elaboration of the offerings. In addition a specific probe related to the telematics services were included as a result of the emerging importance of telematics technology for the network]

2.2 How is the network structured to deliver the offerings?

Probe: How has this structured evolved since you have been in this industry?

[This probe was added to allow a better understanding of the current network structure for the offerings]

3) Relationship Attributes

3.1 What are the contingencies of servitization in a network perspective?

Probe: How does the longer term nature of the offerings affect the network?

Probe: How does the service orientation of servitized offerings affect the network?

[As the long-term relationships and service orientation emerged as related attributes, these are added as probes]

3.2 How would you describe your organisation's relationship with the network?

Probe: How has this relationship evolved overtime?

Probe: Does your organisation perceive any differences across the dealer network?

3.3 How do you communicate with the network (i.e. dealers, customers and partners)?

Probe: With whom do you interact and communicate?

Probe: How frequently does this interaction occur and what is its content?

[These questions are related to the information exchange dimension and they are refined with further probes to better understand the breadth and depth of communication occurring amongst the network. To this end, levels of communication and content of communication emerged through the analysis and reflected in the questions]

3.4 How are TruckCo's routines and systems linked with other network members'?

Probe: How crucial are these systems for your operations?

Probe: What are the issues related to the systems in place?

Probe: What are the joint initiatives with the TruckCo and its network?

Probe: What is your perception on preventative services?

[In light of the previous interviews, questions pertaining to the emerging themes of support systems and preventative services were included]

3.5 What are the contractual agreements between your organisation and other network members?

Probe: How detailed are these contracts?

[An additional probe was inserted in order to elaborate on the contractual agreements]

3.6 How do you see your relationship with other network members in terms of collaboration?

Probe: Do you think both sides are concerned about each other's profitability?

Probe: How are the problems solved in this relationship?

Prompt: Is your organisation willing to share responsibility?

Probe: How closely do you think your organisation should collaborate with TruckCo to be successful?

[Further questions were included in order to identify the manifestation of cooperative norms within the network]

3.7 How do you think your organisation adapted to the relationship with other network members?

Probe: How do you think TruckCo and its network members adapted to each other?

Probe: How important do you think are these changes/adaptations to your organisation?

Probe: What sorts of adaptations are considered important for your organisation?

[Additional probing questions were inserted to better understand the adaptations dimensions]

3.8 How would you define performance in the context of your department and organisation?

Probe: How does your organisation measure its performance?

Prompt: What are the KPIs for TruckCo?

Probe: How does your organisation consider the dealer network in this assessment?

[This question was refined to have a broader perspective that allowed to interviewees to express the way in which they perceived performance. Additional probes and prompts were also added]

D. Ending the Interview

- In your opinion, are there any issues that were overlooked that I should have covered?
- Would you be willing to be informed about the results of this research?

- Could I contact you in case I need to ask further questions to clarify my understanding?

(Personal note: Record the email address and the contact number of the interviewee and obtain the details of the key names mentioned in the interview.)

Thank you very much for participating in this research.

The Interview Protocol - Used for the Interviewee No. 22 at TruckCo

A. Interview Checklist

Items to bring into the interview:

1	Business Cards	√
2	Interview protocol	√
3	Blank Sheets	√
4	Pens to take notes	√
5	Digital recorder	√
6	Extra batteries	√

B. Introduction to the Interview

My name is Mehmet Cakkol and I am a doctoral researcher at Cranfield School of Management. Thank you for agreeing to participate in this study. This interview generally takes place in approximately 60-90 minutes. *(Personal note: clarify if the interviewee is comfortable with the duration of the interview in terms of her/his schedule and briefly explain the purposes of the research)*

With your agreement, I would like to record this interview. All of the information from this interview will be kept confidential and will not be used for another purpose. Your name (or your organisation's name) will never be mentioned without your consent in any of the analysis or resultant publications. Are you comfortable for me to record the interview?

C. Interview Questions

1) Context - Personal History, Organisation and Operating Environment

1.1 Could you please tell me briefly about your background and how you came to work in your current role within the organisation?

Probe:How long have you been with the company?

Probe:What are your main responsibilities?

1.2 Could you please tell me briefly about the organisation and the industry you operate within?

Probe: How has the market evolved over the last 10 years?

1.3 What are the strategic priorities for your organisation?

Probe: How do you see your organisation positioned in the market compare to your competitors?

1.4 How has the organisation introduced the servitized offerings?

Probe: What are the drivers towards servitization?

Probe: How do you see the uptake of servitization within the industry?

2) The Offerings and Network Structure

2.1 How do you perceive the offerings of TruckCo?

Probe: How are these different from the other suppliers?

Probe: Have you experienced any change in the value propositions of TruckCo in the last 10 years? If so, what are these?

Probe: What is your understanding of telematics services?

2.2 How is the network structured to deliver the offerings?

Probe: How has this structured evolved since you have been in this industry?

3) Relationships Attributes

3.1 What are the contingencies of servitization in a network perspective?

Probe: How does the longer term nature of the offerings affect the network?

Probe: How does the service orientation of servitized offerings affect the network?

Probe: How do you see the role of internal organisational factors?

Prompt: What is the role of leadership and technology?

Probe: How do you see the role of external environmental factors?

Prompt: What is the role of customer's demands and legislation?

[In light of the analysis, the internal organisation factors (i.e. leadership and technology) and external organisational factors (i.e. customers' demands and legislation) emerged as the attributes for contingencies. This was reflected on the interview protocol through the addition of the probes and prompts above]

3.2 How would you describe your organisation's relationship with the network in terms of the offerings provided?

Probe: How has this relationship evolved overtime?

Probe: Does your organisation perceive any differences across the dealer network?

3.3 How do you communicate with the network (i.e. dealers, customers and partners)?

Probe: With whom do you interact and communicate?

Probe: How frequently does this interaction occur and what is its content?

Probe: How do you perceive the sharing of information?

Probe: How do you provide feedback to customers and network regarding the activities related to the truck or associated services?

[In light of the analysis, the information exchange dimension is further extended]

3.4 How are TruckCo's routines and systems linked with other network members'?

Probe: How crucial are these systems for your operations?

Probe: What are the issues related to the systems in place?

Probe: What are the joint initiatives with the TruckCo and its network?

Probe: What is your perception on preventative services?

3.5 What are the contractual agreements between your organisation and other network members?

Probe: What is your perception of these contracts?

Probe: How detailed are these contracts?

Probe: How influential are these contracts in your decisions and activities?

3.6 How do you see your relationship with other network members in terms of collaboration?

Probe: Do you think both sides are concerned about each other's profitability?

Probe: How are the problems solved in this relationship?

Prompt: Is your organisation willing to share responsibility?

Probe: How do you think the nature of the relationships affect cooperation?

[In light of the analysis, nature of relationships emerged as the main attribute for cooperative norms dimensions. Accordingly this was reflected in the interview questions]

3.7 How do you think your organisation adapted to the relationship with other network members?

Probe: How do you think TruckCo and its network adapted to the relationship with your organisation?

Probe: How important do you think are these changes/adaptations to your organisation?

Probe: What sorts of adaptations are considered important for your organisation?

Probe: How innovative are these adaptations?

Prompt: What sort of innovative adaptations does TruckCo offer?

[In light of the analysed interviews, innovation was defined as the main attribute for adaptations dimensions. Therefore the questions above reflect that findings

3.7 How would you define performance in the context of your department and organisation?

Probe: How does your organisation measure its performance?

Prompt: What are the KPIs for TruckCo?

Probe: How does your organisation consider the dealer network in this assessment?

D. Ending the Interview

- In your opinion, are there any issues that were overlooked that I should have covered?
- Would you be willing to be informed about the results of this research?
- Could I contact you in case I need to ask further questions to clarify my understanding?

(Personal note: Record the email address and the contact number of the interviewee and obtain the details of the key names mentioned in the interview.)

Thank you very much for participating in this research.

Appendix D The Coding Templates

This Appendix has two related purposes. The first is to present the coding templates that are developed within this study. The second objective is to demonstrate the way in which the template evolved throughout the interviews as part of the abductive research process. To this end, there are three interview protocols within this Appendix. The first one is the initial protocol that was designed prior to the empirical study. Due to the exploratory nature of the study, an extra care was taken not to nias the emerging data therefore the coding template was structured according to the main areas of inquiry at the highest level. The second is the template that was generated towards the middle of the interviewing process which evolved to incorporate additional questions. The third is the template that emerged towards the end of the data collection process. It is important to note that due to confidentiality concerns some parts of the coding structure is not shown in order not to disclose the identity of the organisations that participated in this study.

The Initial Coding Template prior to Interview No. 1

Context

Offerings and Network Structure

- Offering Types
- Network Structures

Relationship Attributes

- Contingencies
- Relationship Dimensions
    - information exchange
    - operational linkages
    - legal bonds
    - cooperative norms
    - b-s adaptations
- Outcomes

The Emergent Coding Template after Interview No. 28

Key: Highlighted texts indicate that the theme was refined and expanded in the third coding template.

Context

- Organisational/Industry Background
  - Evolution/history of TruckCo
    - Origins of the company
    - Evolution of dealer network
  - Future/Strategic Vision
  - Strategic Priorities
    - Balance product/services
  - Competitive Environment
    - Competitors
    - Differentiation
  - Strategic Challenges
- Internal Context
    - Restructuring
      - HQ
    - CEO Leaderships/ Top Management Commitment
    - Technology
    - Product/Service Structure
    - Sales structure/centralization
      - Control
        - Sales Force
        - Customer
      - Pricing
      - Consistency of Message
      - Focusing dealers on service provision

Offerings and Network Structure

- Offering Types
  - Basic Offering
    - Customer imperatives
      - Customer properties
        - Small customers
      - Customer roles
        - Buyer
        - Payer
        - User

            - Small vs. large customers
        - Network Structure
            - Dyadic structure
                - Truck/customer relations
    - Product/Service Offering
        - R&M contracts
            - Lease options
        - Customer imperatives
            - Customer properties
                - Medium to large customers
            - Customer roles
                - Buyer
                - Payer
                - User
                - Small vs. large customers
            - Counselling
                - operational
        - Network Structure
            - Triadic structure
                - TruckCo/customer relations
                - TruckCo/dealers relations
                - Customers/dealers relations
    - Advanced Offering
        - Customer imperatives
            - Customer properties
                - Business customers
                    - Logistics operators
            - Customer roles
                - Buyer
                - Payer
                - User
                - Small vs. large customers
            - Counselling
                - operational
                - political
        - Network Structure
            - Tetradic structure
                - Maintenance related network
                    - TruckCo/customer relations
                    - TruckCo/dealers relations
                    - Customers/dealers relations
                - Telematics related network
                    - Truck/customer
                    - TruckCo/TelCo
                    - TelCo/customer
- Network Properties
    - Effects of centralization of sales
    - Structuring Dealerships
        - Emergent characteristics
            - Hierarchy

                - Control
                - Power
                - Motivation
                - Autonomy
        - Performance Measurement for dealers
        - Dealer-customer Relations
            - evolution
            - challenges

Relationship Attributes

- Contingencies
    - Long-term
        - Network complexity
        - Alignment
        - Network reliance
        - Transactional
        - Relational
        - Integrated
    - Service orientation
        - Customer focus
            - Opening times
            - Customization
        - Service evaluation
        - Dealers service contracts
    - Leadership
        - CEO
    - Customers' demands
        - Legislation
            - MOT
            - Euro regulations
            - Tax regulations
- Relationship Dimensions
    - information exchange
        - communication
            - marketing of offerings
                - market intelligence
                - communicating the service element
                    - total cost of ownership concept
            - levels of communication
                - sales level
                - kam level
                - ceo level
            - focus
                - product
                - service
                - business

- personal communication
  - face to face
- knowledge
  - product
    - warranty related
  - R&M
    - Service operations
      - Procedures
        - Technical
          - Mechanics
      - Parts
  - Telematics

- operational linkages
  - support systems
    - product support
    - service support
    - online systems
      - inventory
    - business support
    - consistency
      - dealers perception of support
        - size and influence
  - preventative services
    - bonus system for dealers
      - impact on service performance
    - telematics
      - cost savings
        - fuel consumption
        - accidents
          - delivery improvements
      - instant location
        - retrieving stolen vehicles
  - parts business
    - parts discount line

- legal bonds
  - nature of contract
    - details of the contract
    - warranty related
    - service operations related
      - inclusive services
    - customer issues
      - vague terms
      - TruckCo miscommunication

- cooperative norms
  - joint initiatives
  - partnerships

- b-s adaptations
  - investments
    - product

- process
- business

- Outcomes
  - Perception of performance
    - Dealers
    - TruckCo
    - customers
  - Incentivization/bonus
    - KPIs for dealers
      - Parts vs. After-sales
      - Sales force
  - Revenue enhancing
    - Increased revenues
    - Stable revenues
  - Value enhancing
    - Customer related
      - Understanding the needs
      - Demand for services
      - Transparency
        - Cost
      - Comprehensive
  - Sustained benefits
    - Customer related
      - Lock-in
      - Innovative
      - Differentiating from competitors
    - Satisfaction
      - Manufacturer
    - Loyalty
      - Product
        - Brand/image
      - Service levels
      - Customer Lock-in

The Emergent Coding Template after Interview No. 38

Key: Highlighted texts indicate that the theme was refined and expanded with respect to the prior coding template.

Context

- Organisational/Industry Background
  - Evolution/history of TruckCo
    - Origins of the company
    - Evolution of the industry
      - In-house maintenance
    - Evolution of dealer network
    - HQ
  - Future/Strategic Vision
  - Strategic Priorities
    - Balance product/services
  - Competitive Environment
    - Competitors
    - Differentiation
  - Strategic Challenges
- Internal Context
    - Restructuring
      - HQ
    - Product/Service Structure
    - Sales structure/centralization
      - Control
        - Sales Force
        - Customer
      - Pricing
      - Consistency of Message
      - Focusing dealers on service provision

Offerings and Network Structure

- Offering Types
  - Basic Offering
    - Customer imperatives
      - Customer properties
        - Small customers
      - Customer roles
        - Buyer
        - Payer

        - User
        - Small vs. large customers
    - Network Structure
        - Dyadic structure
            - Truck/customer relations
- Product/Service Offering
    - R&M contracts
        - Lease options
    - Customer imperatives
        - Customer properties
            - Medium to large customers
        - Customer roles
            - Buyer
            - Payer
            - User
            - Small vs. large customers
        - Counselling
            - operational
    - Network Structure
        - Triadic structure
            - TruckCo/customer relations
            - TruckCo/dealers relations
            - Customers/dealers relations
- Advanced Offering
    - Customer imperatives
        - Customer properties
            - Business customers
                - Logistics operators
        - Customer roles
            - Buyer
            - Payer
            - User
            - Small vs. large customers
        - Counselling
            - operational
            - political
    - Network Structure
        - Tetradic structure
            - Maintenance related network
                - TruckCo/customer relations
                - TruckCo/dealers relations
                - Customers/dealers relations
            - Telematics related network
                - Truck/customer
                - TruckCo/TelCo
                - TelCo/customer

- Network Properties
    - Effects of centralization of sales
    - Structuring Dealerships

        - Emergent characteristics
            - Hierarchy
            - Control
            - Power
            - Motivation
            - Autonomy
    - Performance Measurement for dealers
    - Dealer-customer Relations
        - evolution
        - challenges

Relationship Attributes

- Contingencies
    - Long-term
        - Network complexity
        - Alignment
        - Network reliance
        - Transactional
        - Relational
        - Integrated
    - Service orientation
        - Customer focus
            - Opening times
            - Customization
        - Service evaluation
        - Dealers service contracts
    - Internal organisational context
        - Leadership
            - CEO
            - Introduction of servitization
            - Motivation
            - Role for future
            - Technology
                - Leadership strategy
                - Adoption of telematics
                - TelCo partnership
    - External Environmental
        - Customers' demands
            - Legislation
                - MOT
                - Euro regulations
                - Tax regulations
- Relationship Dimensions
    - information exchange
        - communication
            - marketing of offerings

        - market intelligence
        - communicating the service element
            - total cost of ownership concept
    - levels of communication
        - sales level
        - kam level
        - ceo level
    - focus
        - product
        - service
        - business
    - personal communication
        - face to face
- knowledge
    - product
        - warranty related
    - R&M
        - Service operations
            - Procedures
                - Technical
                    - Mechanics
            - Parts
    - Telematics
    - Information sharing
        - Transparency in the network
- operational linkages
    - support systems
        - product support
        - service support
        - online systems
            - inventory
        - business support
        - consistency
            - dealers perception of support
                - size and influence
    - preventative services
        - bonus system for dealers
            - impact on service performance
        - telematics
            - cost savings
                - fuel consumption
                - accidents
                    - delivery improvements
            - instant location
                - retrieving stolen vehicles
    - parts business
        - parts discount line
- legal bonds
    - nature of contract
        - details of the contract

                - warranty related
                - service operations related
                    - inclusive services
                - customer issues
                    - vague terms
                    - TruckCo miscommunication
        - cooperative norms
            - nature of relationship
                - transactional
                - relational
                    - joint initiatives
                - integrated
                    - partnerships
        - b-s adaptations
            - innovation
                - product related
                - process related
                    - service operations
                - business innovation
            - investments
        - range
            - product variety
            - products and services
                - dealer services
                - customer
                    - one stop shop
            - innovative services
                - customer expectations
- Outcomes
    - Perception of performance
        - Dealers
        - TruckCo
        - customers
    - Incentivization/bonus
        - KPIs for dealers
            - Parts vs. After-sales
            - Sales force
    - Revenue enhancing
        - Increased revenues
        - Stable revenues
        - Business performance
            - Vehicles sold
            - Service performance
    - Value enhancing
        - Customer related
            - Understanding the needs
            - Demand for services
            - Transparency
                - Cost

- Comprehensive
- Operational
  - Product
    - Quality
      - Reliability
  - Service related
    - consistency

- Sustained benefits
  - Customer related
    - Lock-in
    - Innovative
    - Differentiating from competitors
  - Satisfaction
    - Manufacturer
  - Loyalty
    - Product
      - Brand/image
    - Service levels
    - Customer Lock-in

Key Definitions

A list of definitions for the key concepts in the thesis	
Term	**Definition**
Ego-network	Refers to the first-tier relationships (i.e. the customers, suppliers and partners. This does not include any second tier relationships.
Inter-organisation relationship (IOR)	An identity outside organisational boundaries which is a collection of direct or indirect interactions amongst the actors and organisations involved.
Network structure	It is related to the way in which the network of a manufacturer is structured. Within the context of this research, it refers to the ego-network of the manufacturer which includes only the first tier relationships such as the customers, suppliers and partners.
Relationship dimensions	The five relationship dimensions adopted from Cannon and Perrault (1999): information exchange, operational linkages, legal bonds, cooperative norms and buyer-seller adaptations
Servitization	Longitudinal relational processes, during which a provider integrates goods, services and knowledge components into unique combinations that are aimed at meeting customers' evolving business needs.
Servitized offerings	The offerings which are composed of products and services that is sold as a package and delivered over a period of time. Some scholars refer to these offerings as solutions
Servitizing manufacturer	A manufacturer that provides a form of servitized offerings to its customer base
Servitizing network	A supply network which delivers servitized offerings